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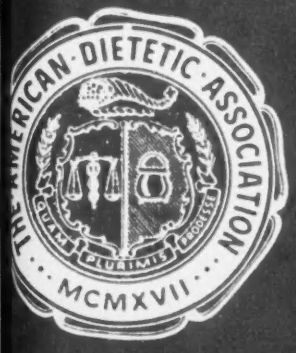

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Dietary Department of Malben, Israel — *Lilian Cornfeld*

39th A.D.A.
Annual Meeting
Milwaukee
October 9-12, 1956

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The Food Crisis of Humanity[1]

JOHN C. WEAVER, Ph.D.

Dean, School of Arts and Sciences
Kansas State College, Manhattan

WHO Photo

Famous Ifagao rice terraces of the Philippines, two thousand years old, represent a feat of planning and engineering to reclaim mountainous land with only the simplest tools.

IN OUR land of comparative and traditional plenty—and at the moment even confounding surplus—most of us find it difficult to sense the pressing reality of the elemental problem of having sufficient food to live. A majority of the world's people do, however, feel hunger as an omnipresent enemy. Reliable estimates indicate that of the some 2½ billion people in the world, at least 1¾ billion are undernourished. We are a part of one world, and we are finding to our cost that we cannot stand apart from starving neighbors.

On the plus side of the ledger in man's far-flung struggle to wrest sufficient food from his physical world, we have the enormously significant forward strides of science and the technologic arts. There have been tremendous advances in the fields of plant and animal breeding that provide not only for larger yields of food per unit of area, but also for improved quality and dependability of performance within ever widening ecologic frameworks. There have been advances in the fields of soil fertilization and improvement, including the techniques of crop rotation; advances in the extension of available arable land through engineering triumphs in the irrigation of lands that are too dry and the drainage of lands that are too wet; advances such as nutritionists and dietitians are seeking to make in the basic understanding of human nutrition and the more effective utilization of the food that can be made available.

World Needs

Unfortunately, the multiplying benefits of scientific and technologic advance have not been brought with anything like equal effectiveness to all peoples and all parts of the world. Probably the most serious single problem of our age is the fact that in spite of our apparent gains, the margins of safety in the battle between human want and the total available world food supply are at best narrow.

According to the estimates of the United States Soil Conservation Service, there are some 4 billion acres of arable land in the world which are usable under current circumstances—4 billion acres, which so far as we can now be certain, is all that is available for meeting the food requirements of a world population numbered at around 2½ billion. Obviously, this averages out to less than 2 acres of arable land per person.

Taking into account all of the tremendous variability of such things as living standards, potential productivity of different soil types, food preferences, and intensiveness of land utilization in various parts of the world, competent nutritionists claim that in the over-all average, 2½ acres of reasonably productive arable land are required to provide one individual with an adequate diet for a year. Clearly, if there be any essential validity in this measurement, the world is already in a position where there is insufficient usable land to furnish adequate food for the people now living. And, consider how this already grave situation is compounded, when you add into the equation the claim that an additional ½ acre of arable land is needed per capita to provide adequately for the fibers of clothing and other essential demands.

The simple arithmetic of the situation is much too easy. If we must have approximately 3 acres arable land per person, and we already have 2½ billion people to provide for, we must conclude that at the

[1] Presented before the Kansas Dietetic Association in Manhattan, on May 4, 1956.

In Ceylon, the Food and Agriculture Organization is helping with schemes for growing rice in the dry zones of the country. Here (left), farmers near the village of Gal Oya prepare a paddy field with the help of water buffalo. Below, delegates to an International Rice Commission meeting in Japan watch a new type tractor adapted especially for rice cultivation demonstrated.
(FAO photos)

present technologic level of world society, we need 7½ billion acres arable land for everyone to have adequate food, clothing, and shelter. We actually have only 4 billion.

Population Growth

It is discouraging enough to begin our race from a starting line so far to the rear, but indeed our situation seems even more bleak when we look at two of the fast-stepping racers on the track ahead of us. In the first place we are obliged to match our skill with a runaway rate of population increase. Man's numbers are increasing at the present explosive rate of more than 20 million per year. And in this context, remember too, that standards of living are also rising and, as a result, the material desires of each individual become ever larger and more demanding.

It is estimated that in the year 5500 B.C., the population of the entire world was about 5 million, no more than half the present number now residing in the New York metropolitan area. Twenty-five hundred years later, in 3000 B.C., the world's population is thought to have risen to approximately 10 million, an increase of 4 one-hundredths of 1 per cent per year. Another some four and one-half millenia later, by the year 1650 A.D., the world's population is pegged at a total in the vicinity of ½ billion, another comparatively modest increase of 7 one-hundredths of 1 per cent per year.

In the three centuries that have followed, however, the increases have not been so moderate. From 1650 to 1750, the rate of increase jumped to an average of 29 hundredths of 1 per cent per year, and in the period from 1750 to 1850, to 51 hundredths. Between 1850 and 1950, when the world's population increased from 1,100,000,000 to 2,450,000,000 the average rate of increase had doubled itself to become a full 1 per cent per year. Today, there are four and a half times as many people in the world as there

were just three hundred years ago; there are five hundred times as many as in 5500 B.C.

At the present pace we can look forward to a world population of 3½ billion, only forty-four years hence in the year 2000. Yet we are presently unable to stretch the world's food producing potential to nourish 2½ billions properly. Mother Hubbard's problem has truly become humanity's problem.

It has often been argued that one solution to the food crisis of the rapidly increasing human family could be sought through the intensive development of certain now little used areas of the world, largely in the tropics. Just who it is that would be asked to move to the tropics is not explained. Whether the people selected to migrate to such pioneer fringes could live effectively in these new and generally extreme environments is manifestly a moot point. In any event, the physical, political, and economic difficulties inherent in a program for the development of millions of acres of land in the tropics would be stupendous. The job could not be done in a decade; in fact, it is to be doubted that it could be accomplished in half a century. Herein lies the frus-

In Indonesia, as in other Asian countries, rice is the standard diet for babies—an unbalanced diet which leads to numerous nutritional diseases.
(WHO photo by Dr. Øømen)

trating dilemma. It is quite inconceivable that the development of a new tropical food producing potential could proceed at a rate that would keep pace with the needs of just the increase in world population that would occur during the period of development, let alone the matter of alleviating the out-of-balance situation that already exists.

Problem of Erosion

The explosive rate of population increase is not the only fleet-footed antagonist we find on the race track ahead of us. We are also faced with the fact that for all of our engineering triumphs, we are presently losing more productive land each year through soil erosion and depletion than we are gaining through various forms of reclamation. At one time, when our numbers were smaller, productive land was so seemingly plentiful that people saw no need for concern over the possibility of its decline. That time is now long since past, and surely one of the most elemental problems of our era has become the need for maintaining and improving our most valuable physical resource, the soil.

As you well realize, topsoil cannot be stock-piled; it cannot be mined; it cannot be dredged from the sea; it cannot be grown or manufactured. We have only so much and no more. The cause of the soil conservationist is one that can mean the ultimate survival of the race, and intelligent citizens everywhere must see and feel the gravity of the situation about which he speaks.

Many of the gravest economic and political problems of our day stem directly from the fact that the already insufficient food-producing resources of our physical world have been dealt out to the nations of the world with an unequal hand. Terrifying as the world averages of food production potential are, the peoples of some nations face a more distinctly untenable situation than others. For example, the United States has more than 3 good acres of arable land per person, and the technologic skill brought to bear on them is far above the world averages; China has no more than ½ acre per person and little or no technology. Some nations, just by the present nature of things, are condemned to being "lands of famine." The imbalance between man and the technologically available food-producing resources of his physical world is uncomfortably well defined in too many places, and the problems which this situation creates cannot long be solved simply by new political or social orders. They are problems that can ultimately be resolved only through the aid of an onrush of scientific advance and conservational attitudes on a world-wide scale—an onrush that can improve man's basic techniques for dealing more effectively with the physical stage on which the human drama must be played.

One of the most puzzling aspects of the total world food problem is that in the very nations where already are found the most unfavorable man-land ratios are, almost without exception, also found the most rapid rates of population increase. China, India, Japan, Italy—such are the nations where population pressures are already greatest and where the rates of population growth are most fantastic.

China

These are not academic abstractions; these are matters that are very real. Look at China as an example. As we have already indicated, China averages no more than ½ acre of arable land per person. Many totally agricultural districts have population densities comparable to urban areas in the United States. The stark reality of this situation is made graphic when you consider the fact that official estimates put the number of people who have died in China directly from starvation over the past century at 100 million—a number nearly equal to two-thirds of the entire present population of the United States. And these figures, horrible as they

are, include none of the millions who have died of disease and other causes resulting from malnutrition (1).

Yet what of the future in China? The present population is estimated to be somewhere around 583 million. At the present rates of population increase, in the year 2000, China's population would be about 1 billion. Obviously, as man's food-producing patterns now stand in China, this population growth could mushroom an already tragic dilemma to almost twice its present stature.

India and Pakistan

Or, look at India and Pakistan. The combined population of India and Pakistan today is somewhat over 400 million. If each individual were to eat 1400 calories per day, and that is about the absolute minimum, the physical environment of this area as now developed is judged to be capable of feeding no more than 300 million. In nearby Australia, where population pressures are less and population growth is smaller, the average diet is 3000 calories per day. In India, even the fortunate, cannot average half as much.

Yet in the face of these facts, the population of India and Pakistan grows at an accelerated rate. The population in these two political units of southern Asia is expanding at the rate of 14,000 per day. There are 14,000 more people in India and Pakistan this evening than there were last night; there will be 14,000 more by tomorrow night (1). Imagine the situation we would soon experience in Kansas, for example, if every morning of the week, month after month, we were to wake up to find that a brand new community of people, approximately equal in size to Great Bend or Emporia, had moved into the state over night. If this rate of population increase for India were to occur within our borders starting tonight, the population of Kansas just one year hence would be nearly 7¼ million, instead of the present 2 million. It wouldn't be many years before the standing room only signs would be up at every doorway to the state!

In the single decade from 1930–1940, the Indian population grew by a total of 50 million people. Just this ten-year increase represents a larger number of people than the total resident population of England, Scotland, and Wales combined (1).

I ask, is it any wonder there is trouble in the Orient? We must not permit ourselves to fall prey to the notion that the real basis of the seething unrest in this part of the world is anything as superficial and temporal as the activities of the Kremlin. The fundamental problems have far deeper roots than any group of men with a twisted ideology. There are flames burning in deep recesses in the Orient; flames that can be easily fanned into great revolutionary heat. But the elemental fuel on which these fires burn is composed of men en masse out of balance with their physical world.

Japan

As if China and India did not represent enough misery for one continent, see what has happened in Japan over the last century. During the seventeenth, eighteenth, and first half of the nineteenth centuries, the Japanese population was apparently rather well stabilized at around 25 million persons. It was a feudal nation without much contact with the outside world, but almost immediately as the breath of the industrial revolution poured in upon her in the nineteenth century, she began to exchange her rural social organization for industrial development and the urban slum (1).

Practically at once her population began to climb, reaching a total in recent times of between 75 and 80 million. Still there is no more land to support the tripled number of stomachs in Japan than there was some eighty years ago. In a desperate struggle to meet the food demands of her people, Japan sought to emulate Great Britain. Like Great Britain, Japan had become an overpopulated island nation; like Great Britain she could see that her only salvation was to import food. To buy food from elsewhere, however, costs money, and Japan saw her solution to be what Great Britain's had been, namely to use her many human hands to manufacture goods to sell on the world market in exchange for food.

Unfortunately for Japan, however, she did not have a large first class home source of industrial power as did Great Britain in her extensive and high quality coal fields. Furthermore, Japan did not have a world empire like Great Britain to send her raw materials and to serve her as a ready market for fabricated goods. In addition, Japan rather quickly found herself a resented newcomer in the traditional halls of trade. The western commerical world feared her low-cost goods produced in an economy with a low standard of living, and being feared she was bit by bit hemmed in and blocked off.

In many basic ways her primary motivations for expansion in Asia were almost as simple as fight or starve. She chose to fight. She lost. And we, the presumed victors, have now inherited the Japanese dilemma. Among all of our difficult problems, we have few that are more difficult of satisfactory solution than what to do with Japan. It is all too clear that the 80 million Japanese cannot live in decency on the physical resources of the four home islands to which we have sought to relegate her. What road of solution do we now take: (a) Do we at last let her expand as she said she must? (b) Do we confine her to her house and let her starve? Or, (c) do we undertake the burden of feeding her indefinitely?

Such problems are not purely Asiatic. They are sharply repeated in Europe as well. For example, Italy is on the road to doubling her population in the next seventy-five years, and already she has only ¾ acre arable land per person. Severe population pressure is typical of most of Mediterranean Europe.

U. S. Situation

Where does the United States stand in this hungry world that is so rapidly getting hungrier? Partly because we are so comparatively young, partly because we had so incomparably rich an original heritage, we in the United States are far better off than most nations in productive land resources. Nonetheless, with an increasing population and a decreasing area of arable land as destructive practices of soil use continue, we have no basis for self-satisfaction about the problem. We have been inordinately profligate in the careless manner with which we have handled our soil resource. The Soil Conservation Service estimates that since the days of original settlement we have completely destroyed 50 million acres of once arable land, reduced it to the point where it is no longer usable for crops. Another 50 million acres are classified as having been so heavily damaged by erosion as to be on the verge of necessary abandonment. And, added to this, is still another 100 million acres of crop land which have so far been denuded of from one-fourth to three-fourths of their original top soil and are now fast becoming unproductive. This represents a total of some 200 million acres of crop land that we have either lost entirely or severely damaged. This is too much waste for even a wealthy nation; even the billionaire can become a pauper if he gets careless enough.

Especially is such a waste a crime against a starving humanity when it is so completely unnecessary. Those 200 million acres of crop land already destroyed could have provided the optimum food requirements of 80 million people, the present approximate population of Japan.

In a world facing the privations of famine, we in the United States owe it to this one world to get in balance with our own physical environment—and, not sometime tomorrow, but today! If we fail to do so, we not only will cease to be the savior of starving millions abroad, but very presently we shall begin to feel the pinch of a tightening belt and the ache of an empty stomach here at home.

The Future

It is at this point that one might end his comments—end them in the tradition of such of our alarmed contemporaries as William Vogt or Fairfield Osborn. But this I would not wish to do. To leave the matter thus is to seem to accept either the philosophy of despair that society is forever condemned to the "terrible biological slavery" of hunger, or to assume that we face the unavoidable necessity of drastic and forcible reductions in the world's population and its growth.

"To offset the neo-Malthusian preachment of birth control as the sole salvation of a supposedly bankrupt world," I would prefer to echo the more optimistic faith expressed by de Castro, in his recent book *The Geography of Hunger* (2), that we must "no longer accept any form of rigid natural determinism. To concede that the earth sets a fixed, impassable limit to human population is to revert to the old geographical determination" of a century ago, "according to which nature lays down the law while man is no more than a passive pawn in the play of natural forces, devoid of creative will and powerless to escape the crushing authority of his environment. Nothing could be farther from the truth. Man, with his creative and inventive techniques, is well able to evade the coercion of nature, to free himself of the conception of geographical determinism and to transform natural limitations into social opportunities."

P. Lamartine Yates has published a challenging little book which outlines the ideas and aspirations that have motivated the Food and Agriculture Organization of the United Nations. Under the provocative title *So Bold an Aim* (3), he writes:

"Many are pessimistic as to the capacity of the under-developed countries to climb out of primary poverty. . . They point to the apparently meagre mineral resources of many of those countries, the eroded lands and unfriendly climates, the rapidly expanding population on territory in many cases already overcrowded, the absence and impossibility of saving on a scale to provide the capital required, the hopelessness of finding enough exports to pay for needed imports. . .

"It may, however, be pertinent to inquire what the outlook was in Europe 200 years ago when she started pulling herself up by her bootstraps. Could it not be said then that her people were too poor to save on any massive scale, that her agriculture could not be made more fruitful and her peoples would not adapt to factory tasks and urban ways of life? And yet the revolution took place.

"Is the plight of the under-developed countries today any worse than that of Europe in 1750?

"True there are no vast prairie lands in temperate zones waiting to be ploughed, nor are there empty spaces into which to move surplus population on a massive scale. But Europe had gone far down the road to industrialization before she had much recourse to importing food and exporting people. Today agriculture has other tools for increasing production without having to rely on new acres by the million. Also the newer forms of power for industry—oil and still more recently atomic energy—means that industry can be located where people are, not *vice versa*.

"All these things give solid ground for believing that during the next 100 years there could happen in the remaining two-thirds of the world what hitherto has happened in only one-third—a revolution in modes of living, in standards of living, social patterns, arts and skills, culture and thought. If this be a fair assessment, it is just about the most exciting prospect for a century-to-be that mankind has ever

faced. What is almost within human grasp is nothing less than the abolition of primary poverty in the last strongholds of poverty. . ."

I would surely agree that this is, indeed, "So Bold an Aim," But it is more: it is prerequisite; it is in fact, humanity's bivouac with destiny.

And there is reason for optimism; there is heartening evidence, as a recent statement in *Life* magazine (4) makes clear, that *free men* in *free societies* are —unlike the peoples of the Soviet Union and Red China—making significant gains in the struggle with hunger in the non-Communist parts of the world.

With de Castro, "I intend no gruesome prophecy of the end of the world; on the contrary, I believe in the biological and social power of necessity, which at the most critical moments in history always leads mankind to the way of survival. Hunger itself [can] be the guiding force, the mainspring of social revolution that can gradually draw" man forward to ultimately effective techniques and attitudes for living in his physical world.

Conservational Concept

I would express my conviction, however, that this struggle cannot in the end be won exclusively along the battle lines of science, where available resources are multiplied or strengthened through technologic advance. In the long run of human history, final victory can only be achieved through the deep entrenchment of the ethical instincts of true conservation in the hearts and minds of men.

I have often wondered heretically if conservation could as such be considered a field of knowledge. Indeed, I have long speculated as to whether conservation could in itself be defended as a clearly definable subject for a formal course in the school or college curriculum. That conservation is, however, a way of life, a state of mind which should pervade every educational process of man, I think there can be no doubt.

In a cogent phrase, the late Aldo Leopold of the University of Wisconsin defined conservation as the attainment and maintenance of "a state of harmony between men and land." This is the conservational idea. This is the goal that in the interests of ultimate survival, man must not fail to attain. This is a destiny that society can achieve only through the upsurging crescendo of voices of numberless individual men and women whose common convictions cannot in the aggregate be denied.

We must not permit ourselves to be paralyzed into inactivity by the stultifying fear that the over-all problem is so vast that we as individuals cannot make a significant contribution to its solution. As the famed British philosopher Bertrand Russell puts it: "There was never a moment in history when the contribution of individual thought and conscience was so necessary and important for the world as it is in our days. All men, any man at all can contribute to the betterment of the world." As individuals in world society, our responsibility is clear enough; as workers in intimate contact with the minds and ethical instincts of the people of a great agricultural state we have obligations that present an even sterner challenge.

I believe that the most profoundly persuasive case for the conservation idea with which I am familiar is carried in the central threads of the collection of Aldo Leopold's essays published under the title *A Sand County Almanac* (5). If there are any among you who have not lived its pages, you have an inspiring, poetic, and intellectual experience before you. In bringing my remarks to a close, I would like either to remind you of, or draw your attention to some of the more sober conclusions which Professor Leopold expressed in the pages of this little book.

To Leopold, the conservational concept was imbedded in the realm of moral and ethical behavior—of religion itself. He says: "All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to cooperate (perhaps in order that there may be a place to compete for).

"The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively the land. . . A land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.

"In human history, we have learned (I hope) that the conqueror role is eventually self-defeating. Why? Because it is implicit in such a role that the conqueror knows, *ex cathedra*, just what makes the community clock tick, and just what and who is valuable, and what and who is worthless, in community life. It always turns out that he knows neither, and this is why his conquests eventually defeat themselves."

Leopold goes on to observe that "conservation is getting nowhere because it is incompatible with our Abrahamic concept of land. We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man. . ."

The Challenge

Let me in conclusion throw Leopold's gauntlet of challenge down before you: "Despite nearly a century of propaganda, conservation still proceeds at a snail's pace; progress still consists largely of letterhead pieties and convention oratory. On the

back forty we still slip two steps backward for each forward stride.

"The usual answer to this dilemma is 'more conservation education.' No one will debate this, but is it certain that only the *volume* of education needs stepping up? Is something lacking in the *content* as well?

"It is difficult to give a fair summary of its content in brief form, but, as I understand it, the content is substantially this: obey the law, vote right, join some organizations, and practice what conservation is profitable on your own land; the government will do the rest.

"Is not this formula too easy to accomplish anything worth-while? It defines no right or wrong, assigns no obligation, calls for no sacrifice, implies no change in the current philosophy of values. In respect of land-use, it urges only enlightened self-interest. Just how far will such education take us?" Conservation in the final analysis is ethics, not economics.

Many a conservation project represents "a beautiful piece of social machinery, but [all too often] it is coughing along on two cylinders because we have been too timid, and too anxious for quick success, to tell [the people involved] the true magnitude of [their] obligations. Obligations have no meaning without conscience, and the problem we face is the extension of the social conscience from people to land.

"No important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties, affections, and convictions . . . Conservation has not yet touched these foundations of conduct. . . In our attempt to make conservation easy, we have made it trivial."

This is not condemnation; this is a call to battle. With firm resolve, let us step forward to the firing line with steady hands and a confident tread.

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School Lunchroom as Community Center

At Skokie School, Winnetka, Illinois, the School Council has evolved a school Insurance Company to find the best means of dealing with the problem of broken dishes. It is described by an eighth grader as follows: "I had bought my insurance in sixth grade for 7 cents and this insurance will last me until I graduate. I am glad I did because last year I had an accident and broke a dish."

The Insurance Company refuses to pay a claim if it decides the breakage is not accidental, or it may pay half if damage is partly accidental. Students have been taught many elementary concepts of insurance in a meaningful way and have been helped over a situation that otherwise may be embarrassing. Teachers also carry dish insurance.

Another facet of the lunchroom at the Skokie School is the union of boys and girls working at the dishwashing machine. Its purpose is to teach students fundamentals of labor organization as well as to provide practical service to the school. Each student is paid the standard wage of a free lunch. Weekly meetings are held to discuss problems of labor and management.

General supervision of the lunchroom has been delegated to a special Lunch Committee authorized by the School Council. The Committee consists of volunteers who apply and are accepted by a vote of the Committee. Duties include keeping everything running smoothly in the lunchroom. When things get a little out of hand, any member of the Committee can give the offending student a ticket. After three such tickets, the person is usually excluded from the lunchroom. Tickets are given for violations of lunchroom laws which are revised annually and passed by the Council.

Social studies classes are assigned a period for cleaning the lunchroom. Custodians clean thoroughly later, but every student is taught that he has responsibility or keeping the lunchroom clean. One eighth grader writes, "Every four weeks a new social studies group takes up the cleaning, that is, staying after the lunchroom is empty and sponging the tables and sweeping the floor. The class usually picks four people to do it each day."

As a school community center, the lunchroom is the focal point for other activities. The Art Committee, for instance, supplies posters and decorative displays, while some school corporations use the lunchroom as a convenient market for their merchandise.

This program was introduced to meet educational needs of the school community center. In large schools today, where the unity of the entire student body becomes more difficult to maintain and opportunities for classes and grades to intermingle become less, the lunchroom holds a strong potential as a school community center.—*Excerpt from Venzke, E.: The lunchroom: a school community center. Nutrition News (National Dairy Council) 19: No. 4 (April), 1956.*

Handling Pork to Prevent Trichinosis[1]

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THE United States—a country which has prided itself on its sanitary culture and its advances in public health—has a higher infection rate from the Trichinella worm than any other country in the world. It is estimated that during his lifetime, the average American will consume pork containing trichinae about two hundred times.

Few infections result in severe illness. "Although in autopsy surveys of over 10,000 persons in the United States, the average incidence of recovery of trichina larvae is 16 per cent, it has been found that if the methods of examination are more thorough, the incidence is about 30 per cent" (1). Infection is not passed from person to person.

Incidence of trichinosis in the United States among hogs during the past fifty years has shown relatively little decline.

Trichinosis is one of the diseases affecting both man and animal. Historically it appears to be as old as man. Some reviewers believe recognition of the disease was the reason the Israelites were prohibited from eating pork. Rats and bears are also affected with it. The extent of the trichinosis problem can be seen from the study of autopsies cited above (1). Authorities on the subject estimate that 16 per cent, or some 22 million persons, may have been infected (principally in the acute phase) to some degree with this strength-draining disease. However, Jewish persons are rarely affected.

A twenty-one-year-old, first-year medical student, James Paget, discovered the encysted worm responsible for trichinosis in February 1835 as he dissected the muscles of an Italian man of fifty who had died of pulmonary tuberculosis. He made sketches which still exist and read a paper on his discovery of the worm four days later. From earlier readings, it is assumed the calcified cysts had been observed in the 1820's, but their significance was not recognized. Owen gave the parasite the name *Trichina spiralis*. In 1896 it was changed to *Trichinella spiralis* by Railliet because the original generic term "trichina" had prior usage in entomology (2).

In the 1840's, trichinae cysts were first observed in the United States in autopsies by Bowditch and Leidy. Leidy found the parasites in a slice of cooked pork he was eating, having been prompted to examine the pork with a microscope because the meat felt gritty between his teeth.

The first fatal case was reported in Germany in 1860 by Zenker. He also suggested the method of spread of the disease. The first clinical occurrence in the United States was reported in 1864. After Zenker's revelation of the life cycle of *Trichinella spiralis* and two serious epidemics of trichinosis in Germany, the hog became an object of suspicion. Although this disease was first recognized nearly a hundred years ago, it still seems to be quite widespread in this country.

Epidemiology of Trichinosis

Trichinosis is caused by minute intestinal worms which can hardly be seen with the naked eye. The larvae ingested in pork develop in the body into adult male or female worms. The adult worms copulate, the female then giving birth to young larvae which migrate into the blood stream and eventually penetrate and encyst in the voluntary muscles. Although mammals other than the hog are similarly infected, the chief source of the infection for man is pork.

Human outbreaks of the disease have occurred among those who eat raw or semi-raw pork products. Often family groups become infected following the preparation of homemade sausage, salami, and other products containing pork. The custom of tasting the mixture of raw pork to determine if it is properly spiced may be dangerous.

Trichinosis would not occur in hogs normally if they did not have access to raw garbage containing raw pork and if they had no access to infected rodents which they might consume. The incidence of trichinosis in garbage-fed hogs is more than 10 per cent. In grain-fed hogs it is less than 1 per cent, and in those fed cooked garbage, it is rare.

The concentration of the worms in grain-fed hogs is generally not sufficient to produce serious clinical illness in those who eat the meat, even though it may not be cooked as thoroughly as generally recommended. Clinical manifestations either are not present or are so mild as seldom to suggest trichinosis.

[1] Received for publication December 27, 1955.

Many of these illnesses are probably diagnosed and treated as mild food poisoning. The chances of serious clinical illness from eating pork derived from garbage-fed hogs is greater, since these animals will frequently have heavy infestations.

Trichinosis is not considered a major public health problem because of the relative scarcity of reported clinical cases. It is readily preventable yet continues to occur in the United States with disturbing frequency.

Symptoms of Trichinosis

In the literature, the symptoms of trichinosis in human beings are described in a number of ways. They vary with the stages of development of trichinae in the body, and the intensity of the symptoms varies according to the number of living trichinae ingested. When the trichinae are developing in the intestines (during the intestinal stage) and producing young, there may be no definite symptoms although sometimes nausea, vomiting, diarrhea, and abdominal pain occur during the first week. Sometimes constipation, instead of diarrhea, is a troublesome and persistent symptom.

From five days to twelve weeks after infection, the new-born larvae are distributed through the body and invade the muscles. This is called the second or muscular stage and is accompanied by muscular pain and fever, both of varying severity. Movements of the eyes and tongue, breathing, chewing, and swallowing may be difficult. Sometimes hemorrhages under the fingernails and toenails occur. In moderately severe or severe infections, there is a gradual lessening of symptoms after four to six weeks as the larvae are becoming fully encysted in the muscles. Thereafter no reproduction of larvae takes place in the muscles. There may be pronounced swelling of the arms, legs, abdominal wall, and face. There may be irregular fever, and sometimes pneumonia develops.

Evidently the encysted trichinae can live for years until they are ingested with the flesh by another host.

Early symptoms of trichinosis often resemble those of other diseases. (Mild cases sometimes develop muscle pains and malaise.) Therefore, the disease is often mistaken for influenza, sinusitis, acute inflammation of the kidney, chronic rheumatic fever, food poisoning, infantile paralysis, typhoid fever, tuberculosis, and other diseases. Diagnostic aids for the physician are tests of the blood for an increase of certain white blood cells (eosinophils); a skin test; and a blood serum test. A biopsy of some of the muscle can also be made to determine the presence of trichinae and acute inflammation.

Treatment

Trichinosis is incurable, except as the body eventually encysts the worms, because there is no way to remove the worms once they've invaded human tissues. However, if a diagnosis is made early while the worms are still in the intestines, purging may be of some help. Bed rest for the patient is very important in order to conserve his strength. The use of ACTH and cortisone may be valuable in lessening the severity of the symptoms.

Control Measures

Although in recent years more concentrated experiments have been carried on to try to control trichinosis, much still needs to be done. One of the first means of controlling trichinosis was the microscopic examination of pork. Such examination was practiced in Germany as early as 1863. Still trichinosis was found. Some European countries believed pork products imported from the United States were responsible. Therefore, beginning in 1879 through 1883, ordinances were passed by governments in Italy, Germany, Portugal, Norway, France, Austria, and Hungary to forbid the importation of American pork (3).

With the passage of a new meat-inspection act by the Congress in 1906, microscopic examination of pork intended for export was discontinued, largely because this inspection proved to be inherently imperfect. According to information published in European countries that imported our pork, reinspections in the receiving countries showed that the parasites were still present in many cases. From a practical standpoint, only about three samples could be examined from each carcass. Even though the samples were taken from muscles most likely to be infected, the chances of not finding the parasites in the small portions of meat examined proved great enough to cast serious doubt on the adequacy of this method of prophylaxis against trichinosis.

One microscopic method used today is the digestion technique, the results of which give reliable information on the presence or absence of trichinae. Dead larvae are likely to be digested; live larvae will resist digestion. Microscopic compression is also used. By this method, thin portions of teased muscle are compressed between two glass plates and examined for trichinae under the dissecting microscope or the low power of the ordinary microscope (3).

Refrigeration of Pork

With the advent of commercial quick-freezing of foods, another opportunity for control of trichinosis was made available. However, frozen pork lacks the desirable qualities of fresh pork, and further investigation of this process is needed.

Instructions for the proper refrigeration of pork for the destruction of trichinae which appear in the Sanitary Code of New York City follow (4). They are used as a guide by other cities.

Pork in groups 1 and 2, refrigeration for the destruction of trichinae. Pork in group 1 shall consist of pieces not exceeding 6 in. in thickness or arranged in layers not exceeding 6

in. in depth, or stored as solidly frozen blocks not exceeding 6 in. in thickness. Pork in group 2 shall consist of pieces or layers or contents of barrels or containers, the thickness of which exceeds 6 in., but is not in excess of 27 in. Pork in group 1 and group 2 to be refrigerated for the destruction of trichinae shall be subjected to a temperature of 5°F., or −10°F. or −20°F. for not less than the corresponding number of successive days, as indicated in the following table:

TEMPERATURE	GROUP 1	GROUP 2
5°F.	20 days	30 days
−10°F.	10 days	20 days
−20°F.	6 days	12 days

Effect of Salt and Dehydration on Trichinae

The possibility of destroying trichinae in pork by the application of salt in varying quantities early attracted the attention of investigators. In conformity with manufacturing procedures in vogue at that time a standard rule was evolved which required the addition of salt to the product in specified amounts. For example, in the case of sausages, the use of 3⅓ lb. salt per 100 lb. ground meat is specified by the regulations. Further investigations are being carried on for information concerning the time trichinae in meat will die when the meat is held at a constant temperature after admixture of the salt, and under conditions where evaporation of moisture from the meat is reduced to a minimum. Most of this investigation is still in progress, and much remains to be done with other concentrations of salt and with meat exposed to different temperatures after salting.

It was in the last war that attention was focused on the possibility of dehydrating pork to save shipping and carrying space and enhancing the keeping qualities of the meat. The first investigations involved meat that was cooked before dehydrating; it was later found possible to produce a pork product of rather high quality by dehydrating the raw meat at relatively low temperatures by the freezing cabinet process. This process involved rapid freezing of the meat, grinding in the frozen state, and drying in a cabinet drier by means of a stream of air passed over and through the meat. It is concluded that temperatures lower than 48°C. are not to be recommended in the dehydration of pork from the standpoint of destroying the viability of any trichinae that may be present, and that if the meat dehydrated at a temperature of 48°C. or higher is dehydrated to a moisture content of 2 per cent or less, the viability of the contained trichinae will be destroyed (5).

Gamma Irradiation of Pork

Research is still progressing on the use of X-rays or gamma rays to render trichina larvae in pork incapable of reproduction. A dose of 3500 rep X-rays applied to trichina larvae *in vitro* will render most of the maturing parasites sexually sterile, and a dose of 5000 to 6000 rep will prevent most of the larvae from developing to adult forms. By means of the penetrating gamma rays of cobalt 60, it may be possible to irradiate whole hog carcasses at once, thus making the meat safe for human consumption. After such irradiation, no change in the flavor of the pork was detectable, and no radio-activity was induced in the meat, so that no injury is produced in any person who eats the meat. Research on the cost of this method of control is still under way. It may be that waste fission products of "atomic" radiation may be cheaper and could be used to yield the desired amount of radiation in pork inexpensively and rapidly (6).

It has been estimated that the total cost of a radiation chamber with operating staff would be around $160,550 per year. Based on 1950 production figures, 68,504,000 head of hogs yielded 9,265,000,000 lb. pork, or an average for each hog of 135 lb., exclusive of lard. For the plant under design (operating at a daily capacity of 2,000 hogs, 260 days in a year), the total production of pork would be 70,200,000 lb. a year; on the basis of an irradiation cost of $160,550 per year, the cost of irradiating the pork would be 0.23 cents per pound or 31.1 cents per hog (7).

Sanitary Disposal of Garbage

Much has been written in recent years about another method for the control of trichinosis in hogs, namely, feeding of cooked garbage. Elimination of the infection in hogs would mean the elimination of the infection in man, and many believe that the cooking of all garbage fed to hogs to a temperature of 137°F. would provide such a safeguard. (Dehydration and reduction of garbage have also been attempted, but up to this time have proved to be too expensive.) Although forty-three states now have regulations or legislation requiring that all garbage and offal fed to hogs be cooked at licensed cooking establishments where adequate recording controls are maintained, adequate enforcement of such a regulation is difficult. Other recommendations along this line which have been made by the National Conference on Trichinosis are: enforcement by the U. S. Public Health Service of the section of the Interstate Quarantine Regulations that prohibits the shipping of uncooked garbage across state lines for the purpose of feeding swine; banning the use of garbage as hog feed; prohibition by federal law of the moving of live hogs or raw pork out of any state that does not have and enforce garbage cooking regulations; education of the farmer to remove all raw pork scraps and offal from his own household garbage to be fed to swine for his own use; dissemination of information on incineration and alternative methods for garbage disposal; and prohibition by state law of the sale of garbage-fed hogs for slaughter at plants not having federal inspection or its equivalent (8).

Another proposal concerning garbage is the dis-

posal of it so that it would be inaccessible to animals. Such means include incineration, burial or use of the sanitary landfill, grinding and disposal with sewage, composting, and reduction for salvage of animal fats. The first two methods are already in wide use—the first in larger cities and the second is generally found in smaller cities, but sometimes in the larger cities also. Homemakers are inclined to dispose of garbage with the sewage. However, disposal units are expensive, maintenance sometimes offers a problem, and this method calls on the sewage plants to handle an additional load which is not possible for all plants to absorb for long without complete remodeling. Research is still under way on composting. At present, composting and reduction have not proved successful economically.

Other methods of control of trichinosis suggested in the literature include destruction of rats; burning or burying deeply in quicklime carcasses of hogs that die; continued education of swine producers in livestock sanitation and disease prevention; enforcement of federal regulations for processed meats, smoking, curing, and various forms of pickling of pork.

Control Measures in the Home

The public, too, must receive continuous education in the proper cooking and processing of pork and pork products. Although this may not be too practical, suggestions have been made for the consideration of enactment of legislation requiring every retail store selling pork or pork products to post one or more signs reading, "Cook pork thoroughly," or some equivalent statement. Further, it is believed that placards for butcher shops, reading "Cook pork thoroughly," should be prepared and distributed by the U. S. Public Health Service, the U. S. Department of Agriculture, and/or state health departments.

The *Trichinella spiralis* is an obligatory parasite; it is limited to a single life condition. There is no free living stage. It will persist when encysted in meat (muscles). It will grow and reproduce at body temperature under the conditions existing in the mucosa of the upper part of the small intestine, in the lymphatic spaces, in the blood stream, and in the striated muscles (9).

Therefore, probably the best and most useful control at present is one which can be applied in every home before eating any pork or pork product—that of thorough cooking. Trichinae are destroyed by heat. The meat thermometer provides the most reliable method for testing thoroughness of cooking when thick cuts, such as hams and shoulder cuts, are roasted. The bulb should be inserted in the center of the thickest part of the meat and should not touch either bone or fat. About 30 to 35 min. per pound of meat should be allowed at an oven temperature between 300° and 350°F. (internal temperature of the meat at 185°F). If a thermometer is not used, small incisions next to the bone can be made to determine whether fresh pork is well cooked throughout. This method can be used with roasts and chops. When thoroughly cooked, the color has changed from pink to gray-white. There are no conditions under which pork remains pink when it is thoroughly cooked.

Carefully controlled experiments have shown that all trichina larvae are quickly killed at 55°C. (131°F.) and instantly killed at 60°C. (140°F.). Federal regulations require that for protection by cooking, all parts of the meat must reach a temperature of 58.3°C. (139°F.). However, the American Public Health Association recommends the cooking of all parts of the meat to 65.6°C. (150°F.); thus 185°F. represents a large margin of safety (10).

Spices have no known value in destroying *Trichinella spiralis*. According to Fellers (11), the value of spices as food preservatives has been overrated.

Fresh sausage is highly perishable, like any ground, fresh meat. It should be thoroughly cooked before eaten. Meat loaf should be cooked at an internal temperature of 185°F. and should never be allowed to stand at room temperature. Special attention should be given to pork liver, also.

Uncooked sausages (liver sausage, frankfurters, bologna) are sold but, if under federal inspection, must be treated in one of three ways to destroy *Trichinella spiralis*: (a) all parts must be heated to the absolute minimum temperature of 137°F.; (b) if not more than 6 in. thick, held at temperatures of not higher than 5°F. for not less than twenty days, −10°F. for not less than ten days, or −20°F. for not less than six days; or (c) subjected to special curing methods including drying, salting, and smoking under sharply specified conditions. Vendored sausage or locally prepared pork products might possibly not be sold under inspection. Some states require inspection. Therefore, the consumer should look for the federal inspection label. This label also protects the consumer when buying processed hams and other processed meats.

A butcher doesn't often grind pork, but if he should, as for meat loaf, the best protection for the next customer who has her meat ground for hamburger is to cook it thoroughly so that the interior reaches at least 139°F. It is doubtful that meat loaf would be eaten undercooked if the homemaker follows the timing in reliable recipes. Unless she knows the hamburger is not pork, it should be cooked thoroughly as she would not be protected by the butcher.

Conclusions

Since trichina worms are acquired in food, trichinosis can be prevented. Prevention so far is the only sure way to bring trichinosis under control. Strict observance of hygienic precautions, such as thorough

cooking of pork products and avoidance of tasting raw pork, would do much to lower the human incidence of this disease. Trichinae can only be destroyed if pork is properly processed before consumption. The consumer would then be assured of freedom from infection by trichinae.

The control and eventual eradication of trichinosis depends on the prevention of feeding of raw garbage to swine and of allowing them access to dead rats which may be infected. This would eliminate the disease in the host animal.

Improvements in diagnostic procedures and in reporting of cases are needed to reveal the number of infections and deaths in man and hogs.

Programs for the control of and eradication of this animal disease transmissible to man need to be continued. There needs to be continued evaluation of the methods used for the control of trichinosis to formulate further recommendations and possible research. We should concentrate on finding workable solutions to those problems which offer the greatest threat and against which remedial action is feasible.

Cooperation between the farm, the public, and the health department is necessary in the control of trichinosis. All groups working together can improve the public's health as far as this disease is concerned.

The control of trichinosis is important, not only because of its effect on the health and life of human beings, but also because of agricultural and economic considerations.

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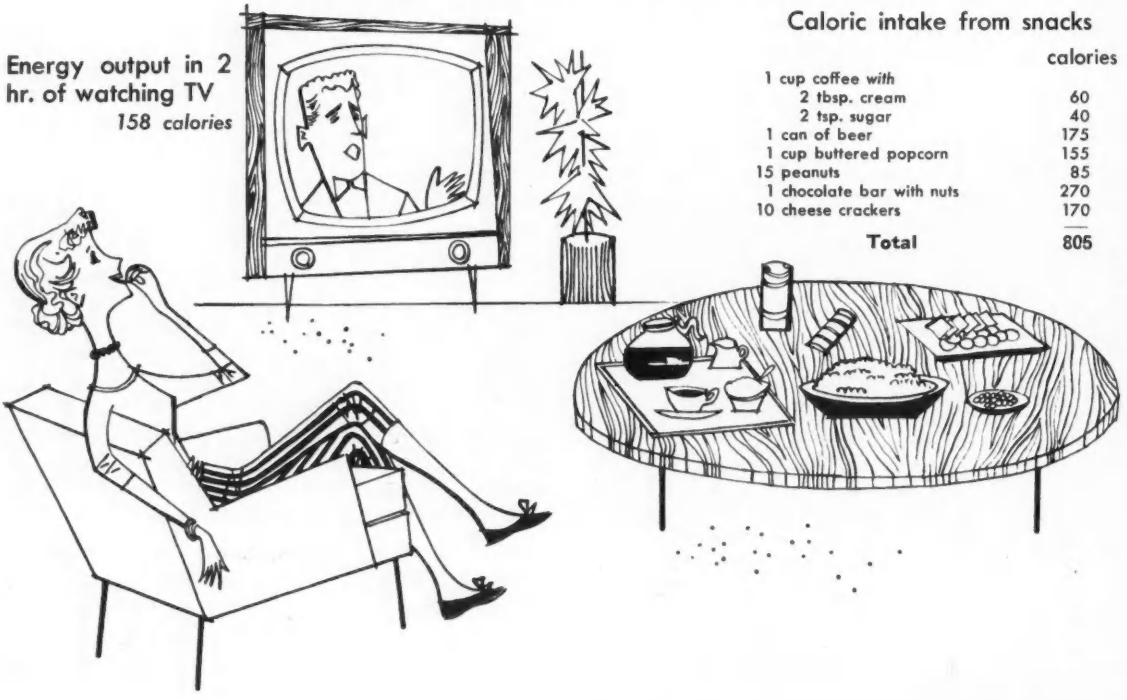
ENERGY BALANCE WHILE WATCHING TELEVISION


Energy output in 2 hr. of watching TV
158 calories
Caloric intake from snacks
calories
1 cup coffee with
2 tbsp. cream 60
2 tsp. sugar 40
1 can of beer 175
1 cup buttered popcorn 155
15 peanuts 85
1 chocolate bar with nuts 270
10 cheese crackers 170
Total 805

Lard vs. a Vegetable Fat in Relation to Liver and Serum Cholesterol[1]

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EXPERIMENTAL evidence as to the extent to which the composition of dietary fat may influence cholesterol accumulation in tissue is neither adequate nor clean cut. Since the classic work of Schönheimer *et al.* (1), sterols of vegetable origin have been regarded as unabsorbable. Some of them—notably the soy sterols (2)—have been reported to interfere with the absorption of cholesterol and to prevent the formation of atherosclerotic plaques (2). Vegetable fats have been rated as inhibitors of cholesterol deposition in tissue (without much reference to their composition) while animal fats have, in an equally sweeping fashion, been rated as likely to increase it.

Recently, however, dihydrocholesterol, which is present in the unsaponifiable part of many fats, has been shown to be absorbed and has been found in atherosclerotic plaques in chickens (3). Curran and Costello (4) have presented evidence suggesting that plant sterols are not so much unabsorbable as that their presence in serum and tissue may often not be shown by the usual analytical procedures. (Saturated sterols, such as dihydrocholesterol and the plant sterol, dihydrositosterol, do not give a positive Liebermann Burchard reaction and are not shown by the usual analytical procedures.) These authors reported that plant sterols, like cholesterol, inhibited cholesterol synthesis. Quantitatively, the percentage of cholesterol in fats derived from adipose tissue may be as low as 0.05. On the other hand, some seed embryo oils have been reported to contain more than 2.0 per cent sterol (5). It is logical, also, to expect that the nature of the fatty acid glycerides, which constitute 97 to 99 per cent of the fat, may be of importance in relation to the absorption and use of food cholesterol and the rate of cholesterol synthesis in the body. In commercially blended shortenings, the presence of unnatural fatty acid isomers (formed during hydrogenation of trienoic acids), antioxidants, emulsifying agents, or other additives may also be important.

The choice of a food fat is likely to be determined by such factors as cost, flavor, texture, melting point, and ease of blending, all of which the manufacturer may alter by his method of processing. The composition of a commercial shortening sold under a given brand name may vary from time to time with the cost and availability of the constituent fats. In one case, we found a variation that did make a difference in cholesterol storage in the laboratory rat. Practically, therefore, it appeared desirable to find out if the differences within the usual range of composition and origin likely to be encountered in our most frequently used shortenings are of any real importance in relation to accumulation of cholesterol in tissue. The two studies reported here were undertaken as pilot experiments and represent only a beginning of the work needed. In each study, lard and a vegetable fat of approximately the same melting point and texture were compared.

Experimental Plan

Study I developed from an investigation of the effect of protein intake on liver cholesterol. The two series of diets used (Table 1) were identical except that one contained lard and the other a commercially hardened vegetable fat.[2] The lard was specially prepared without additives. Diets were kept in the freezer until fed and were given in small amounts to avoid rancidity. When cholesterol was fed, it was dissolved in the melted fat at approximately 80°C. The 13.5 per cent level of fat was that used for previous protein studies.

Rats of the Long-Evans strain were used. When the males weighed 150 gm. and the females 135 gm., 120 rats were divided into sub-groups and fed as follows: (a) 15 per cent protein with lard alone; (b) 15 per cent protein with vegetable fat alone; (c) 15 per cent protein with 1 per cent cholesterol

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[2] Primex.

TABLE 1

*Composition of diets**

ITEM	STUDY I		STUDY II
	Series A	Series B	
	parts	*parts*	*parts*
Casein	5	5	5
Egg albumin	10	25	10
Fat	13.5	13.5	15
Salts (USPXI)	4	4	4
Sucrose*	65.5	50.5	64
"Adex" mix†	1	1	1
"B" mix‡	1	1	1

* When cholesterol was fed, 1 gm. cholesterol replaced 1 gm. sucrose.

† Adex mix furnished, per kilogram diet: 15,000 I.U. vitamin A (as distillate); 1,000 I.U. vitamin D; 5 mg. menadione; and 100 mg. mixed tocopherols. It was made up with cottonseed oil.

‡ "B" mix furnished, per kilogram diet: 4.0 mg. thiamine, 4 mg. riboflavin; 2 mg. pyridoxine; 1.5 mg. biotin; 2 mg. folacin; 10 mg. pantothenate; 10 mg. niacin; 10 mg. para-aminobenzoic acid; 100 mg. ascorbic acid; 500 mg. inositol. Choline was furnished separately at the level of 750 mg. per kilogram diet.

and lard; (d) 15 per cent protein with 1 per cent cholesterol and vegetable fat; (e) 30 per cent protein with lard alone; (f) 30 per cent protein with vegetable fat alone; (g) 30 per cent protein with lard and 1 per cent cholesterol; (h) 30 per cent protein with vegetable fat and 1 per cent cholesterol. The rats were caged individually and weighed weekly; food intake records were kept. After twenty-eight to thirty days the animals were sacrificed by decapitation. Liver fat and cholesterol were determined as previously described (6).

Study II differed from the first in several respects: (a) Only one level of protein (15 per cent) was used. (b) The diets contained 15 per cent fat. (c) Laboratory hardened, winterized cottonseed oil[3], obtained without additives, was used instead of the commercially prepared shortening. (d) The rats were placed on the diet at weaning and fed for seven weeks, making them comparable with those of Study *I* in respect to age at autopsy. (e) Serum cholesterols were determined by the method of Sperry and Webb (7). Otherwise, the procedures for autopsy and analysis of tissues were identical for the to studies.

Results and Discussion

The lipid data for the first study are summarized in Table 2, those for the second study in Table 3.

In both studies, food intake and growth rates were well within normal ranges. Terminal weights of the animals of the corresponding sub-groups in the two studies were not very different. All animals seemed healthy.

The higher levels of liver lipid and cholesterol in all the rats of Study *II* reflect both the higher level of fat intake and the longer experimental period.

In Study *I*, differences in liver lipid and cholesterol between the corresponding sub-groups fed lard and vegetable fat were not very great. Males fed lard plus cholesterol with the 15 per cent protein diet had definitely higher mean liver cholesterols than did those fed vegetable fat, but variability within both groups was high. Females fed 30 per cent protein with cholesterol actually had higher liver cholesterols with vegetable fat than with lard. In general, there seemed to be less tendency toward high liver lipid and cholesterol storage in females than in males, and in animals fed 30 per cent protein than in those given only 15 per cent.

[3] The cottonseed oil was hardened to approximately the melting point of lard by the addition of 10 per cent completely hydrogenated cottonseed oil. Care was taken to keep the temperatures of the fat as low as possible to avoid transesterification. The iodine member of the mixture was 97, as compared with 69 for the commercially blended vegetable fat and 64 for the lard. If the linoleate content of cottonseed oil is taken at the usual figure of 50 per cent, that of the mixture would be 45 per cent as against a probable 7 to 10 per cent for the lard and an unknown figure for the commercial shortening.

TABLE 2

Liver lipids and cholesterol (Study I)

FAT	15% PROTEIN INTAKE				30% PROTEIN INTAKE			
	Number of animals	Total lipid	Total cholesterol		Number of animals	Total lipid	Total cholesterol	
Diets with Fat Only								
		% moist weight	*% moist weight*	*mg./liver*		*% moist weight*	*% moist weight*	*mg./liver*
Lard	10♂	5.5 ± 0.4	0.30 ± 0.02	34 ± 3.5	9♂	3.9 ± 0.1	0.23 ± 0.004	21 ± 1.7
Vegetable fat	5♂	5.5 ± 0.9	0.30 ± 0.04	35 ± 8.0	5♀	3.4 ± 0.1	0.21 ± 0.014	21 ± 1.5
Lard	5♀	4.2 ± 0.1	0.24 ± 0.01	15 ± 0.6	6♂	3.5 ± 0.1	0.20 ± 0.005	15 ± 0.4
Vegetable fat	5♀	4.1 ± 0.9	0.21 ± 0.01	16 ± 1.4	4♀	3.9 ± 0.4	0.21 ± 0.008	16 ± 1.2
Diets with Fat and Cholesterol								
Lard	10♂	15.8 ± 1.4	2.58 ± 0.19	327 ± 32	10♂	6.3 ± 0.7	0.20 ± 0.20	106 ± 22
Vegetable fat	5♂	11.8 ± 2.0	1.85 ± 0.29	248 ± 40	5♂	5.8 ± 0.6	0.16 ± 0.16	92 ± 21
Lard	6♀	8.5 ± 0.9	1.57 ± 0.29	131 ± 25	6♀	6.5 ± 0.4	0.12 ± 0.12	95 ± 7
Vegetable fat	4♀	8.6 ± 2.3	1.48 ± 0.21	122 ± 39	4♀	6.9 ± 1.2	0.45 ± 0.45	105 ± 45

TABLE 3

Serum and liver lipids (Study II)

FAT	NUMBER OF ANIMALS	TERM WEIGHT	LIVER LIPID	LIVER CHOLESTEROL			SERUM CHOLESTEROL
				Moist weight	Actual weight	Fat-free dry weight	
Diets with Fat Only							
		gm.	*% moist weight*	*%*	*mg./liver*	*mg./liver*	*mg./100 gm.*
Lard	5♂	266	15.5 ± 3.5	0.57 ± 0.06	85 ± 16	2.45 ± 0.37	77 ± 5.4
Cottonseed oil	5♂	268	9.9 ± 2.0	0.38 ± 0.04	45 ± 6	1.38 ± 0.13	67 ± 3.2
Lard	6♀	210	6.2 ± 0.8	0.29 ± 0.02	23 ± 3	1.09 ± 0.11	86 ± 4.3
Cottonseed oil	5♀	204	4.8 ± 0.14	0.26 ± 0.01	20 ± 1	0.96 ± 0.04	78 ± 3.2
Diets with Fat and Cholesterol							
Lard	9♂	256	29.3 ± 2.0	3.87 ± 0.18	668 ± 35	20.5 ± 1.7	95 ± 7.4
Cottonseed oil	10♂	242	26.6 ± 1.6	3.73 ± 0.21	605 ± 44	17.4 ± 2.1	82 ± 5.9
Lard	10♀	209	25.5 ± 2.2	4.35 ± 0.19	550 ± 28	21.2 ± 2.2	109 ± 7.6
Cottonseed oil	10♀	218	17.9 ± 1.9	3.52 ± 0.28	364 ± 28	16.0 ± 2.2	131 ± 11.4

The animals fed 15 per cent fat from weaning and for seven weeks (Study *II*, Table 3) showed more evidence of high liver lipid and cholesterol storage on the lard diet. Mean serum cholesterol values were always higher for females than for the corresponding groups of males. However, cholesterol-fed females on cottonseed oil had higher serum cholesterols than did those fed lard with cholesterol, and there was very little difference between the serum values for the female controls on the two diets. The differences in liver cholesterol between values for control males fed lard and control males fed cottonseed oil were proportionately greater than for the corresponding cholesterol-fed groups of males.

In general, differences are the less significant because, in each case, lipid and cholesterol values of one or two animals were likely to deviate rather widely from those of the others in the group. However, comparisons based on median values rather than on means gave the same indication that, in males, lard tends to promote a greater liver storage of fat and cholesterol than does vegetable fat or cottonseed oil. In females, differences have not been so marked, and there has even been evidence that the vegetable fat might give rise to higher levels of circulating cholesterol than does the lard.

Since the vegetable oils used in a commercially blended fat vary from time to time with availability and price, it is possible that the values for vegetable fat obtained in Study *I* may not be representative of all vegetable shortenings. Undoubtedly the percentage of fatty acid with more than one double bond was higher in the cottonseed oil used in Study *II* than in the fat used in Study *I*. This may have contributed to the ease of movement of the cholesterol.

While the study leaves many unsolved problems, results suggest:

(a) Differences in composition of dietary fat may make more difference in males than in females, and in animals fed a low- rather than a high-protein diet.

(b) The level of serum cholesterol is not always parallel to that of stored cholesterol, especially in females. Feeding of lard in males with a low-protein diet tended to result in more liver cholesterol storage than did a like amount of the commercial shortening or hardened cottonseed oil.

Summary

Two studies are reported, in which matched groups of rats were fed (a) lard and (b) vegetable fat, each with and without cholesterol.

The lard-fed male rats tended to store somewhat more liver cholesterol than did those fed equal percentages of vegetable fat. Differences were lessened by an increase in the protein content of the diet. Lard-fed females showed smaller differences in liver cholesterol than did males. Serum cholesterols were, however, consistently higher in females.

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Nutritional Status of the Aged in Michigan[1]

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COUNTY institutions for the care of the aged and infirm are undergoing many changes in organization and financing. Traditionally, the "county home" has included a farming operation, and the residents of the home contributed a large share of the labor for both the farm and the household. With the introduction of social security, more elderly persons are able to support themselves outside of an institution until such time as the infirmities of age require medical and nursing care. Thus the county institution is becoming a combination of hospital and infirmary with a minimum of simple domiciliary care.

An infirm and aged population cannot contribute to farm labor or to the heavier housekeeping and food preparation tasks about the institution. The result is that the farms are being liquidated, and the county must assume not only the cost of purchasing food on the open market but an enlarged labor force to service the institution.

The problems of providing adequate food to the residents of these county institutions is further complicated by the age, illness, and inactivity of the residents and by the fact that most of them do not expect to leave the institution alive. Thus there may be little motivation for making an effort to learn to eat and like institutionally prepared meals. It is pertinent during this period of changing social organization to record studies of nutritional status and food intake or supply of residents of county-supported institutions.

An evaluation of the food service of one county hospital and infirmary (herein called Institution A) was made by Smith (1) from March through December, 1953, and again in September, 1954. Estimates of the nutritive value of the per capita food supply indicated that dietary allowances recommended by the Food and Nutrition Board of the National Research Council (2) were met or exceeded, although the consumption of certain foods, such as leafy green and yellow vegetables and certain fruits, appeared low in relation to standard food plans. Analyses of blood hemoglobin, serum carotene and vitamin A, and serum ascorbic acid of the residents are presented here as further evaluation of the nutritional adequacy of the food supplies of the institution.

During the same period, it was possible to make a similar survey of the blood hemoglobin, plasma ascorbic acid, vitamin A and carotene, and plasma proteins of the patients assigned to the rehabilitation unit of a second county institution (Institution B).

Plan of Study

Sixty-four of the 107 residents of Institution A were in the hospital unit; of these, 16 were bed patients. The distribution of ages was described by Smith (1). The age range was from forty-four to ninety-eight years, with 77 per cent of the subjects more than sixty-five years old.

A capillary blood sample was obtained from each patient in October 1954, following a breakfast or lunch which was free from food containing more than traces of ascorbic acid. An aliquot of blood was analyzed immediately for hemoglobin by the alkaline hematin method, and serum was separated from the remainder of the blood by centrifuging. Aliquots of serum were deproteinized with 5 per cent trichloroacetic acid and frozen for ascorbic acid analyses; the remainder of the serum was frozen for analyses of vitamin A and carotene, placed in dry ice, and transported to the Foods and Nutrition Laboratory of Michigan State University. Serum

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[5] The assistance of Alice H. Smith, Chief, Nutrition Section, Michigan Department of Health, is gratefully acknowledged.

TABLE 1

Hemoglobin of residents of two county institutions for the care of the aged

RANGE OF VALUES	HEMOGLOBIN							
	Men				Women			
	Institution A		Institution B		Institution A		Institution B	
	Mean	Number of cases	Mean	Number of cases	Mean	Number of cases	Mean	Number of cases
gm./100 ml.	*gm./100 ml.*		*gm./100 ml.*		*gm./100 ml.*		*gm./100 ml.*	
Below 9.9	7.3	1		0	9.6	1		0
10.0 to 10.9	10.5	2		0	10.1	1		0
11.0 to 11.9	11.5	2		0	11.6	1		0
12.0 to 13.9	13.3 ± 0.1*	20	13.4 ± 0.2	11	13.3 ± 0.1	13	12.8 ± 0.2	12
14.0 to 15.9	14.9 ± 0.1	36	15.1 ± 0.2	6	14.5 ± 0.1	18	14.6 ± 0.2	4
16.0 and above	16.9 ± 0.3	11	16.1 ± 0.1	4	16.5	1	16.4	1
Mean of all patients.....	14.4		14.4		13.8		13.4	

* Standard error of the mean.

total ascorbic acid was determined by the procedure of Lowry, Lopez, and Bessey (3) and vitamin A and carotene were determined by the method of Bessey *et al.* (4).

An attempt was made, using the recall method, to estimate the food intake of each patient for the 24-hr. period preceding the sampling of blood. This was relatively unsuccessful since some residents did not speak English, others were senile, and a few were deaf and mute; food records were obtained for sixty subjects. Twenty-four patients received some form of vitamin supplement to the diet.

The patients from Institution B were selected by the medical staff for their potential for partial or complete rehabilitation. The age range was from thirty-three to ninety-three years. Only 7 of 21 men studied were sixty-five years of age or more, but 13 of 17 women were in this age group. Blood was drawn during the latter half of the morning after a 7 o'clock breakfast consisting of cereal, milk, toast, butter, coffee, and fruit juice. The amounts of fruit juice served were 4 oz. or less, and many persons did not take this item because of dislike or prejudice. No food was allowed after breakfast.

Methods for collecting and analyzing blood were the same as used at Institution A. The serum protein concentration was determined by the gradient tube method described by Lowry and Hunter (5).

No records of the total food supply were available for Institution B, except as this might be inferred from the daily menus. However, the patients were able to cooperate in providing both a dietary history and a one-day diet recall record. Since sources of outside food were almost nonexistent, the house menu could be used as a partial check on the accuracy of these records.

Results

HEMOGLOBIN

Blood hemoglobin values of the residents of the two county institutions are given in Table 1. The mean for all male patients at each institution was 14.4 gm. hemoglobin per 100 ml. blood. Female patients of Institution A had a mean hemoglobin of 13.8 gm. per 100 ml. blood, while the mean value in Institution B was 13.4 gm. A higher mean value for blood hemoglobin for men than for women over fifty years of age was reported by Gillum *et al.* (6), who found that the mean was 14.5 gm. per 100 ml. for men and 13.4 gm. per 100 ml. for women in a study of 577 Californians.

The distribution of all hemoglobin values also was the same as that reported by the California workers, although it was somewhat different in the two institutions. Fifty per cent of both men and women from Institution A maintained hemoglobin concentrations between 14.0 and 15.9 gm. per 100 ml. blood, but 50 per cent of the men and 76 per cent of the women in Institution B had hemoglobin concentrations between 12.0 and 13.9 gm. per 100 ml. Thus, while there were no extremly low hemoglobin concentrations recorded for subjects from the latter institution, the median value of this limited series was nearly 2 gm. per 100 ml. lower than in Institution A.

Three men and two women in Institution A had hemoglobin values less than 11.0 gm. per 100 ml. The lowest value observed, 7.3 gm. per 100 ml., was for a ninety-eight-year-old man whose medical history was satisfactory except for senility. An eighty-four-year-old man with a hemoglobin value of 10.6 gm. per 100 ml. also appeared to be in satisfactory health. One seventy-year-old man with hemiplegia had a hemoglobin concentration of 10.4 gm. per 100 ml. The two women with low hemoglobin values were seventy-two and sixty years old; one was diabetic, the other syphilitic. Food recall records were obtained for three of these patients, all of whom had included meat and milk in the meals of the previous day.

Six patients were being given a liver extract preparation. Their hemoglobin concentrations ranged

TABLE 2

Serum total ascorbic acid of residents of two county institutions for the care of the aged

RANGE OF VALUES	SERUM TOTAL ASCORBIC ACID					
	Institution A			Institution B		
	Mean	Number of cases		Mean	Number of cases	
		Men	Women		Men	Women
mg./100 ml.	*mg./100 ml.*			*mg./100 ml.*		
Less than 0.1	0.06 ± 0.01*	3	1		0	0
0.1 to 0.29	0.21 ± 0.01	18	5	0.21 ± 0.02	5	4
0.3 to 0.49	0.39 ± 0.01	16	4	0.35 ± 0.02	7	3
0.5 to 0.69	0.58 ± 0.01	10	7	0.63 ± 0.02	3	1
0.7 to 0.89	0.80 ± 0.02	9	6	0.79	1	2
0.9 to 1.09	1.01 ± 0.02	7	4	0.94	0	3
1.1 to 1.29	1.15 ± 0.02	5	2		0	0
1.3 and above	1.49 ± 0.05	3	4	1.53	0	1

* Standard error of the mean.

TABLE 3

Serum vitamin A and carotene of residents of two county institutions for the care of the aged

RANGE OF VALUES	INSTITUTION A			INSTITUTION B		
	Mean	Number of cases		Mean	Number of cases	
		Men	Women		Men	Women
Serum Vitamin A						
mcg./100 ml.	*mcg./100 ml.*			*mcg./100 ml.*		
Less than 9.9	6	1	0	—	0	0
10.0 to 19.9	16 ± 1.1*	3	4	13 ± 1.5	2	1
20.0 to 29.9	26 ± 1.1	4	3	25 ± 2.4	1	2
30.0 to 39.9	35 ± 0.4	13	6	36 ± 1.3	3	2
40.0 to 49.9	45 ± 0.5	21	9	45	1	0
50.0 to 69.9	58 ± 1.0	17	9	61 ± 3.2	2	1
70.0 and above	74 ± 2.8	1	2	89 ± 5.7	3	1
Serum Carotene						
Less than 19.9	12	0	1	—	0	0
20.0 to 49.9	36 ± 3.0	8	2	41	0	2
50.0 to 79.9	65 ± 1.4	21	12	60 ± 3.6	4	0
80.0 to 109.9	98 ± 1.5	21	8	91 ± 3.5	2	3
110.0 to 139.9	124 ± 2.8	9	5	121 ± 1.3	7	0
140 and above	150 ± 1.9	1	5	189 ± 16.1	3	2

* Standard error of the mean.

from 11.6 to 15.3 gm. per 100 ml. Eleven additional cases were given a capsule containing 75 mg. ascorbic acid, liver fraction, and folic acid. Corresponding means for hemoglobin were 14.9 ± 0.4 and 13.5 ± 0.6 gm. per 100 ml. whole blood.

The finding that all but five of the subjects had hemoglobin values above 11.0 gm. per 100 ml. was in accord with the report of Smith (1) that food sources of protein and iron were adequate in the dietary of Institution A.

Only four patients from Institution B consumed less than 60 gm. protein per day, and only one, a bed-fast woman of ninety-three, less than 45 gm. Mean caloric intakes were 2294 ± 630 and 1582± 454 and mean daily iron intakes were 12.0 and 7.9 mg. for the men and women respectively. The food supplied by this institution would also appear adequate in these respects.

ASCORBIC ACID

Mean total serum ascorbic acid concentrations were 0.57 and 0.39 mg. per 100 ml. for all male patients and 0.73 and 0.59 mg. per 100 ml. for female patients in Institutions A and B, respectively (Table 2). These mean values were lower than those reported by Morgan *et al.* (7) for 514 Californians living in their own homes, although greater than the average concentrations of 0.27 mg. per 100 ml. found for forty-four men living in a county institution in California. Sixty-six per cent of the men and 51 per cent of the women in Institution A and 94 and 59 per cent of the men and women in Institution B had serum ascorbic acid values below 0.7 mg. per 100 ml. Twenty-seven men and ten women in the two institutions had values of less than 0.3 mg. per 100 ml.

The food supplied at Institution A was theoretically adequate to meet the dietary allowances for ascorbic acid for all residents (1). However, many of the patients had not developed a liking for fruits and vegetables. One-fourth of the patients from whom recall food records were obtained on a day when tomatoes and oranges had been served indicated that they had not eaten these foods.

Institution B also served generous amounts of fruit juices, but acceptance was low. It is difficult to evaluate the ascorbic acid contribution of vegetables served in this institution since the cooking of vegetables was completed in time to serve the staff before patients were fed. The vegetable was held during this interval in heated containers under conditions conducive to destruction of the ascorbic acid (8). Mean intakes of ascorbic acid calculated for food as served were estimated at 43 and 60 mg. per day for men and women, exclusive of one case being given large doses of synthetic vitamin.

VITAMIN A AND CAROTENE

There was insufficient serum for analysis of serum vitamin A and carotene for all patients. Table 3 presents values for 93 patients from Institution A and data on serum vitamin A for 19 patients and on serum carotene for patients from Institution B. The average vitamin A concentration in the serum of patients from Institutions A and B was 43 and 46 mcg.

TABLE 4

Concentration of hemoglobin, ascorbic acid, vitamin A, and carotene by age groups

AGE RANGE	NUMBER OF CASES	HEMOGLOBIN	ASCORBIC ACID	VITAMIN A	CAROTENE
years		*gm./100 ml.*	*mg./100 ml.*	*mcg./100 ml.*	*mcg./100 ml.*
30 to 39					
men	2	14.0	0.43		130.6
40 to 49					
men	4	15.8 ± 1.34*	0.60 ± 0.60	42.5 ± 8.1	102.5 ± 33.6
women	4	13.2 ± 1.44	1.15 ± 0.61	35.0 ± 20.5	147.4 ± 1.3
50 to 59					
men	11	14.9 ± 0.70	0.80 ± 0.24	49.2 ± 9.3	101.4 ± 36.9
women	7	14.4 ± 1.76	0.42 ± 0.40	46.0 ± 21.2	71.5 ± 27.6
60 to 69					
men	18	14.4 ± 0.86	0.38 ± 0.28	41.4 ± 23.5	90.9 ± 36.7
women	13	13.9 ± 1.54	0.61 ± 0.26	43.6 ± 18.0	84.6 ± 28.8
70 to 79					
men	39	14.7 ± 1.78	0.55 ± 0.32	41.2 ± 16.6	84.0 ± 29.1
women	19	13.4 ± 1.16	0.67 ± 0.31	48.9 ± 17.2	112.4 ± 61.5
80 to 89					
men	16	13.8 ± 1.57	0.55 ± 0.41	55.6 ± 15.9	90.8 ± 41.6
women	6	13.4 ± 0.69	0.54 ± 0.48	35.4 ± 7.1	75.1 ± 30.5
90 and over					
men	3	11.1	0.32	32.7	41.6
women	3	13.0	1.27	24.4	74.1

* Standard deviation of the mean.

per 100 ml. About two-thirds of the patients in each institution had serum values of less than 50 mcg. per 100 ml. Sixteen per cent in Institution A and 31 per cent in Institution B had serum values below 30 mcg. per 100 ml. There was no difference in the distribution of values in men and women.

About one-third of the serum vitamin A concentrations reported by Gillum, Morgan, and Sailer (9) were under 50 mcg. per 100 ml. and two-thirds were below 60.

The mean serum carotene concentrations in this series were 83 and 92 mcg. per 100 ml. for men and women of Institution A and 112 and 110 mcg. per 100 ml. for male and female subjects in Institution B. Gillum *et al.* (9) reported mean serum values of 118 and 120 mcg. per 100 ml. for men and women respectively, with 53 per cent of the values below 110 mcg. Seventy-nine and 48 per cent of the subjects in the study reported here had serum carotene values below 110 mcg. per 100 ml.

Three patients had serum vitamin A concentrations of less than 18 mcg. per 100 ml. and serum carotene values ranging from 93 to 146 mcg. per 100 ml. Two of these patients were seventy-nine and ninety-three years of age, and both suffered from advanced cardiovascular disease. The third was a woman of forty-five of limited intelligence but without demonstrated pathology which might limit carotene absorption or conversion to vitamin A.

EFFECT OF AGE ON BLOOD CONSTITUENTS

The data were tabulated by decades (Table 4), but no mean age differences were apparent until after age ninety at which time mean hemoglobin vitamin A, and, to a lesser extent, carotene values were lower. It was of interest that there were individuals at all ages who appeared able to maintain normal blood concentrations of these chemicals. Between the fifth and seventh decades, the variability in the hemoglobin and vitamin A values recorded increased sharply for the women. Similar increases in variability for men were seen in the sixth and seventh decades.

SERUM PROTEIN

Serum protein concentrations determined on subjects in Institution B varied from 5.9 to 8.5 gm. per 100 ml. blood. Only two cases exceeded 7.9 gm. per 100 ml. Both were subjects with cardiovascular disease. The mean value for men was 7.07 gm. per 100 ml. and for women, 7.13 gm. These mean values agree closely with the mean of 7.13 gm. per 100 ml. and the range of 6.4 to 7.9 gm. given by Albritton (10) for men. Mean serum protein concentrations reported by Morgan and co-workers (11) were 6.47 gm. per 100 ml. for men and 6.44 gm. per 100 ml. for women.

Discussion

Studies of blood constituents among aged persons have been too limited to establish standards for nutrient concentrations required for adequate nutrition. Data reported by the California workers (6, 7, 9) and Kirk and Chieffi (12, 13) suggest that blood concentrations of ascorbic acid, vitamin A, and carotene for older persons may be similar to those of healthy younger adults and depend on the

consumption of similar quantities of food supplying these nutrients. Serum concentrations greater than 0.7 mg. per 100 ml. ascorbic acid and 30 mcg. per 100 ml. vitamin A have been associated with adequate or good nutrition with respect to these vitamins in healthy adults (14).

Approximately 61 and 77 per cent of subjects in Institutions A and B, respectively, did not meet this standard of ascorbic acid nutrition; 16 and 33 per cent had less than 30 mcg. per 100 ml. vitamin A in the plasma. However, only eleven cases in the two institutions failed to meet both criteria. Seven of these were men.

Thus, less than 10 per cent of the residents studied could be considered to be in poor nutritional state with respect to both vitamin A and ascorbic acid. The nutritional status of the group appeared to be better in relation to vitamin A than to ascorbic acid; particularly was this true of the men.

This study confirms the finding of Morgan *et al.* (7) that aging men tend to maintain a lower plasma ascorbic acid concentration than women. No individual dietary intakes were available for Institution A and the influence of a selective intake cannot be evaluated. Eleven men and three women from this institution were getting 75 mg. ascorbic acid per day in capsule form. The plasma concentrations ranged from 0.48 to 1.31 mg. per 100 ml. for the men and from 0.40 and 1.11 for the women.

Single recall dietary records were obtained from subjects of Institution B. Daily ascorbic acid intakes were estimated to be 43 and 60 mg. per day for men and women respectively. One woman given 200 mg. crystalline ascorbic acid per day had 1.53 mg. per 100 ml. of the nutrient in her serum in spite of advanced age. These limited observations do not support the concept of a sex difference in utilization of ascorbic acid. It is possible that selected individuals of both sexes had an increased requirement for this nutrient, since 75 mg. per day in capsule form in addition to diet did not maintain blood concentrations within expected ranges in all cases. However, other individuals responded with serum concentrations which one would predict for healthy adults with similar intakes (14).

The population group studied was heterogenous, and socio-economic dependency was the only common factor among the residents. Moreover, a majority of the subjects suffered from one or more disease processes associated with advanced age. Therefore, no attempt has been made to relate concentrations of blood constituents to physiologic factors other than age. The increased variability in hemoglobin and vitamin A concentrations observed in the fifth through the eighth decades may only measure the lack of acceptance of vegetable food. The only significant correlation found between blood constituents was between ascorbic acid and carotene, both of which are obtained from similar food sources.

On the other hand, Ohlson *et al.* (15) observed that about 15 per cent of women in the fifth and sixth decades excreted greatly increased urinary calcium and that this group reported pronounced menopausal symptoms. Since hemoglobin must be formed in the body and vitamin A is, in part, converted from carotene, it is reasonable that variation in efficiency of utilization may occur under the stress of the menopause. Moreover, absorption of both iron and carotene probably depends on an intestinal medium which promotes maximum miscibility of two relatively insoluble chemicals. The ages at which increased variability occurred, from fifty to seventy years in the women and seventy to ninety in the men, suggests that further study of these age groups should be directed toward an analysis of variability rather than the expression of average values.

Fifteen individuals had been admitted to Institution A within four months of the time the tests were taken. The concentrations of hemoglobin and of the three nutrients were practically identical with those for the group as a whole. Six of the nine patients from Institution B admitted within four months of the test were women whose plasma concentrations of ascorbic acid ranged from 0.65 to 1.53 mg. per 100 ml., values considerably above the ranges for the group as a whole. The other three patients, all with Parkinson's disease, had serum ascorbic acid concentrations of less than 0.22 mg. per 100 ml.

Summary

Blood hemoglobin and blood serum concentrations of ascorbic acid, vitamin A, and carotene were determined for residents of two county hospitals in Michigan, and information was obtained about their dietary habits. The nutritional status of the two groups appeared to be better in relation to vitamin A than ascorbic acid. However, less than 10 per cent of the residents of the two hospitals could be considered in poor nutrition with respect to both vitamin A and ascorbic acid. Mean values for blood hemoglobin, ascorbic acid, vitamin A, and carotene of men and women of Institution A were higher than those of patients in Institution B. Likewise, the quality of food preparation and the acceptance of food were better in the first institution. The management of this institution had received and used the advice of a competent state nutritionist (1).

There was greater variability in hemoglobin and serum vitamin A concentrations in the blood of persons in the sixth through the eighth decades than among the younger people. This variability could measure an exaggeration of the accepted variabilities of any population sample and could be associated with aging and the various infirmities of age found among the individuals of the sample. A more probable explanation would be differences in acceptance of certain foods by this age group.

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Bacterial Contamination of Restaurant Table Surfaces

Because of the sanitary significance of contamination of serving surfaces in restaurants and public eating places, Richard D. O'Neill and Ernest Reed, Department of Plant Sciences, Syracuse University, recently conducted a survey to determine the extent of bacterial populations on serving surfaces, such as tables and counters.

Swab samples were taken from the serving surfaces of ten different eating places on three different days, and on each visit to each establishment, fifteen different samples were taken at random from bare serving surfaces, making a total of 450 individual samples. The eating places chosen included: a hotel cafeteria, luncheonette, sea food restaurant, bar and grill, public cafeteria, drugstore fountain, short-order house, diner, variety store fountain, and a restaurant catering to the college trade. Tests were made from wood, hard rubber, plastic, linoleum, and glass surfaces, and on which a wide variety of methods of cleaning was in use.

Findings revealed that at one time or another, one or more uncovered eating surfaces in each place visited was contaminated with bacteria. At different times, counts ranged from zero to more than 800,000 per square foot—and these counts were found in samples from the same restaurants. Counts in more than a third of the samples were in excess of 5,000 per square foot, and in four of the ten establishments, microbes of the coliform group were found on at least two of the surfaces tested.

The report comments: "These extremes were frequently found in samples from the same restaurant on the same day. This is not an unexpected finding in view of the enormous number of inconstant factors which can appreciably affect the incidence and survival of microflora on restaurant serving surfaces. It becomes apparent that the occurrence of surface contaminants is a highly unpredictable and to some extent a fortuitous thing. The restaurant patron may be served on an essentially sterile surface or on a highly contaminated one, depending somewhat on his choice of restaurant but also depending upon the day he may choose to visit a given restaurant and the serving surface to which chance may lead him."

The authors conclude also that when the hot water used for cleaning serving surfaces cools, it and the cleaning rag both may actually incubate contaminants and become, in effect, a mixed bacterial culture.

They also point out that, although it is undoubtedly true that food does not contact such surfaces as directly, intimately, or extensively as it contacts containers or utensils used in serving or eating, the close association between food and serving surfaces presents some opportunity for contaminants to be transferred to food directly or by way of serving dishes and silverware and thus directly to the restaurant patron.

The study was made under grants from the paper place and doily industries and has been published by Farley Manning Associates, New York City.

Food Expenditures in Four Institutions[1]

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A PREVIOUS article reported (1) the amounts of food issued, wasted, and otherwise lost in four institutions and the effect of such losses on the nutritive content of the diet. The present article reports food expenditures in these four institutions, in terms of: (a) the money value of food in these institutions in comparison with that of low-income families, (b) the extent of the loss in money value due to plate waste and other food losses, and (c) division of food money among groups of foods.

The four institutions selected for this study were part of a larger number of sixteen institutions that took part in an earlier study (2). The selection was not random, but was determined by size, type, and willingness to cooperate. The population in three of the four institutions was large—from 90 to 804 persons. Two of these were old-age institutions, one in the Southeast and one in the Northeast. The third was a home for boys seven to seventeen years old in the Northeast. The fourth institution was a children's home in the Southeast in which the food preparation and service was carried out in individual cottages, each having only about fifteen residents. Two of the cottages, a boy's and a girl's, were included in the survey. The over-all food service in each cottage resembled family food practices rather than institutional practices.

Money Value of Food

The total money value of the food issues[2] in the four institutions varied from 56 to 83 cents per person per day (Table 1). However, the population of the four institutions differed in needs for food, so that a comparison of per capita figures has limited meaning. Therefore, to give a rough measure of total food needs, expenditures have been expressed in terms of dollars per 1000 calories needed. In these calculations, the National Research Council's recommended allowances for calories have been used in conjunction with the age-sex population distribution of each institution. When thus adjusted to allow for the varying needs of the residents of each institution, the food costs of three of the four institutions were similar. The fourth, an institution for aged persons in the Southeast, had considerably higher cost per 1000 calories of food needed, 49 cents compared with 25 to 29 cents in the others. This higher cost can be attributed chiefly to the fact that it was not practicable to separate the cost of food served to the staff from that served the residents. The food for the staff was more expensive than that given residents. In two of the other institutions, staff meals were included with those of the residents, but the same menu was used for all; therefore, staff meals had less effect on total food costs.

The money value of food in the two institutions in the Northeast was considerably less than that of food for low-income families in that region (Table 1). The cottage-type children's home in the Southeast spent approximately the same as did low-income families in Birmingham. Food costs of the old-age institution in the same region were considerably higher than those of low-income families in that city.

All four institutions used donated foods. The money value of this food made up one-fifth of the total in the old-age institution in the Northeast. In the others, it amounted to about one-tenth of the total. Most of the donated food in the Northeastern old-age institution consisted of whole fluid milk and butter. Nonfat milk solids and a miscellaneous assortment of other items were donated to the other institutions.

In the two Northeastern institutions, purchased and donated food was augmented substantially by home-produced food. In the old-age institution this

[1] The study on which this article is based was made by Arthur D. Little, Inc., under contract to the Household Economics Research Branch, Agricultural Research Service, U. S. Department of Agriculture. The project leader for the Department of Agriculture at the initiation of the study was Rosalind Lifquist, now on the staff of the Agricultural Marketing Service. J. Aileen Merwin carried on the study for Arthur D. Little, Inc., until her death in 1953. Constance L. Brine, Ph.D., replaced Miss Merwin.

[2] Food issues refer to the food as delivered to the institutional kitchen before any preparation.

TABLE 1

Money value of food per person and per 1000 calories needed per day in four institutions, 1953–54, and by low-income families

CALCULATION	MONEY VALUE								
	Institutions					Low-income families*			
	Old-age		Children's						
	Southeast	Northeast	Southeast		Northeast	Nationwide urban survey	Birmingham	Minneapolis-St. Paul	Buffalo
			Boys' cottage	Girls' cottage					
	cents	*cents*	*cents*	*cents*	*cents*	*cents*	*cents*	*cents*	*cents*
Per person	83	56	65	58	81	92	62	85	103
Purchased	74	36	58	51	51	87	58	81	102
Home-produced†	—	9	—	—	23	3	1	2	‡
Gift	9	11	7	7	7	2	3	2	1
Per 1000 calories needed§	49	27	29	27	25	36	29	37	43

* Source: "Food Consumption of Urban Families in the United States . . . with an Appraisal of Methods of Analysis" (3) and unpublished data. The income classes used were as follows: Nation-wide urban survey, $1000–$1999; Birmingham, under $1000; Minneapolis-St. Paul and Buffalo, under $2000. Surveys were made in 1948. For this article, the costs have been adjusted to 1953 price levels according to the Bureau of Labor Statistics' Retail Food Price Index (U.S. City Average).

† Valued at current wholesale prices.

‡ 0.005 or less.

§ Based on National Research Council's recommended allowances weighted by the population of each institution.

consisted chiefly of milk; in the children's, of milk, pork, and vegetables.

Food Losses

It might be expected that food losses would be highest in the institution with the relatively high food costs. However, as reported earlier (1), losses[3] as a percentage of the issues, in terms of food quantities and nutrients, were similar in the three large institutions, but much smaller in the cottage-type institution. In terms of total money value, the losses in the three large institutions were from about one-fifth to one-fourth of the total food issued; in the smaller institution, only 5 to 6 per cent (Table 2).

In the large institutions, the food groups showing the greatest proportionate losses in terms of money value were "leafy, green and yellow vegetables," "potatoes and sweet potatoes," and "meat, poultry, and fish." Other food groups showing large proportionate losses were "dry beans and peas, nuts," and in one institution "eggs" and "grain products."

While it is true that in the old-age institution with the high food cost the total money value loss was highest as was the loss for seven of the eleven food groups, these losses were not enough greater to account for the wide difference in food costs between that institution and the other three.

In two of the three institutions with relatively high food losses, plate waste accounted for half of the total (Table 3). In the third institution, plate waste accounted for a third of the total. Expressed in monetary terms, from 4 to 12 cents were lost per person per day because of plate waste. The figure of 12 cents in the old-age institution in the Southeast is partially explained by the fact that many of the

TABLE 2

Losses in food groups, expressed in money value of issues, in four institutions, 1953–1954

FOOD GROUP	MONEY VALUE				
	Old-age institutions		Children's institutions		
			Southeast		
	Southeast	Northeast	Boys' cottage	Girls' cottage	Northeast
	%	%	%	%	%
Leafy, green and yellow vegetables	51	40	11	14	40
Citrus fruits, tomatoes	24	12	5	5	18
Potatoes and sweet potatoes	42	42	3	4	32
Other vegetables and fruits	16	20	13	7	28
Milk, cream, ice cream, cheese	11	12	1	1	8
Meat, poultry, fish	33	41	11	11	37
Eggs	41	11	6	3	12
Dry beans and peas, nuts	30	40	5	5	30
Flour, cereals, baked goods	38	18	5	11	19
Fats, oils	22	5	3	3	9
Sugars, sweets	29	17	6	2	13
Miscellaneous	3	27	0	*	2
Total money value	26	21	5	6	19

* 0.5 per cent or less.

[3] Food loss refers to any part of the food issues that was ordinarily edible, i.e., not refuse and was discarded at some step in the preparation or service of food. During the process of editing the data, all of the weights were converted to an As Purchased basis, which means back to the original state of the food as delivered to the institution before any refuse or edible food was removed and any cooking procedures carried out. This conversion was made so that the amount of food issued, eaten, and lost would be on a similar weight basis.

TABLE 3

Losses in money value of food per person per day, by area of loss in four institutions, 1953–54

AREA OF LOSS	LOSS									
	Old age institutions				Children's institutions					
					Southeast					
	Southeast		Northeast		Boys' cottage		Girls' cottage		Northeast	
	cents	%	*cents*	%	*cents*	%	*cents*	%	*cents*	%
Prior to preparation	0.1	*	0.1	1	0.1	3	0.1	3	1.0	7
Preparation	2.0	9	1.6	14	0.8	25	1.3	36	1.9	13
Serving	0.4	2	1.1	9	0.2	6	0	0	1.5	10
Plate	11.6	54	4.4	38	1.2	38	0.9	25	7.9	52
Left-over	7.5	35	4.5	38	0.9	28	1.3	36	2.8	18
Total	21.6	100	11.7	100	3.2	100	3.6	100	15.1	100

*0.5 per cent or less.

residents were bed-patients. Such high plate waste as well as high loss of left-overs would seem to indicate over-estimation of food needs in dietary planning and possibly little coordination of the staffs preparing the food and those in the wards or dining rooms serving it.

In the southeastern children's institution, where food losses were very low (5 to 6 per cent), the food was served family-style under the supervision of the housemother and cook. Both paid strict attention to the "cleaning-up" of plates. The cook was also diligent about using left-overs and losing as little edible food as possible when she prepared the food. It seems likely that a loss of 5 per cent is minimum for either institutional or family units. In relatively few families would the loss probably be that low.[4]

It would be unreasonable to expect that any institution could operate daily without having some food loss. One must consider that the food manager can neither satisfy the likes and dislikes of all of the residents at any one time, nor anticipate at the time of food preparation the moods of the residents at serving time. Frequently, serving size is larger than desired. However, in the larger institutions there appears to be considerable opportunity to cut food losses, permitting in turn substantial savings in the budget. For example, if each of the large institutions in this study losing from 12 to 22 cents per person per day had one hundred residents, the loss for each institution would have been $360 to $660 per month.

Division of Dollar Among Food Groups

In the institution that spent most for food, the largest amount went for "meat, poultry, and fish" (Table 4). At this institution, the average daily expenditure was 23 cents a person, as compared with 11 to 15 cents in the other three institutions. The higher expenditure was due, of course, in part to the

[4] One of the authors (FC) has estimated that average caloric loss in households is 15 per cent (4).

TABLE 4

Money value of food groups per person per day, issued in four institutions, 1953–54

FOOD GROUP	MONEY VALUE				
	Old-age institutions		Children's institutions		
			Southeast		
	South-east	North-east	Boys' cottage	Girls' cottage	North-east
	cents	*cents*	*cents*	*cents*	*cents*
Leafy, green and yellow vegetables	2.7	1.3	1.8	2.9	3.3
Citrus fruits, tomatoes	2.7	3.6	3.1	3.6	4.3
Potatoes and sweet potatoes	1.3	0.8	1.4	0.8	1.3
Other vegetables and fruits	11.9	4.7	4.5	3.2	4.2
Milk, cream, ice cream, cheese	14.4	15.5	25.7	17.1	24.7
Meat, poultry, fish	22.6	12.6	10.8	14.1	14.6
Eggs	7.0	4.6	3.9	2.8	7.8
Dry beans and peas, nuts	0.7	0.4	1.3	0.3	1.3
Flour, cereals, baked goods	6.4	4.8	6.3	6.5	8.8
Fats, oils	7.7	4.8	2.8	3.1	5.6
Sugars, sweets	2.9	1.3	1.3	2.2	3.7
Miscellaneous	2.4	1.7	2.1	1.3	0.9
Total	82.7	56.1	65.0	57.9	80.5

fact that food for staff members was included in the average. In the two children's institutions and in the old-age institution in the Northeast, the money value of the "milk" group was higher than that of any other.

When calculated on a percentage basis (Table 5), the division of the institution food dollar was roughly like that of the family food dollar, indicating that these institutions follow the same general pattern of food consumption as do families. The most regular differences shown in the table are the greater proportion of the food budget allocated to the "milk" group in the institutions and the smaller proportions to "fats" and "sugars." The fact that two of these institutions are for children would account for the greater emphasis on milk than in the food budgets of families with their usual mixtures of adults and children.

The division of the food dollar among food groups will vary among institutions with differences in the quantities of the groups consumed and the prices paid. Quantities of each food group issued are presented in the earlier article (1). Table 6 in the present article shows the average money value per pound of each food group. The average money value per pound of a food group in turn depends on (a) the selection of items within a group and (b) the prices paid for the purchased items or the money value assigned to the home-produced or donated foods.

Several differences between institutions in average

TABLE 5

Distribution of food money (issues) by food groups in four institutions, 1953–54, compared with that in family surveys

FOOD GROUP	DISTRIBUTION OF FOOD MONEY								
	Institutions					Low-income families*			
	Old-age		Children's			Nationwide urban survey	Birmingham	Minneapolis-St. Paul	Buffalo
	Southeast	Northeast	Southeast		Northeast				
			Boys' cottage	Girls' cottage					
	%	%	%	%	%	%	%	%	%
Leafy, green and yellow vegetables	3	2	3	5	4	5	4	4	4
Citrus fruits, tomatoes	3	6	5	6	5	5	4	5	5
Potatoes and sweet potatoes	2	1	2	1	2	2	2	2	2
Other vegetables and fruits	14	8	7	6	5	9	8	9	7
Milk, cream, ice cream, cheese	17	29	39	30	30	15	14	18	14
Meat, poultry, fish	28	22	17	24	18	28	25	24	30
Eggs	8	8	6	5	10	5	6	4	6
Dry beans and peas, nuts	1	1	2	1	2	1	2	2	1
Flour, cereals, baked goods	8	9	10	11	11	10	11	11	12
Fats, oils	9	9	4	5	7	9	13	10	8
Sugars, sweets	4	2	2	4	5	5	6	5	5
Miscellaneous	3	3	3	2	1	6	5	6	6

* Source: "Food Consumption of Urban Families in United States . . . with an Appraisal of Methods of Analysis," (3). For income classes, see footnote Table 1.

food group prices illustrate these points. The two institutions in the Southeast spent 7 and 8 cents a pound respectively for the "potatoes and sweet potatoes" group compared with 5 cents or less by the others. The higher average was due to the use of canned sweet potatoes. The higher average money value for the children's institution in the Southeast for the "flour, cereal, baked goods" group was the result of averaging in large quantities of relatively expensive, donated baked items, such as plain and sweet rolls, cookies, coffee cake, and doughnuts. The higher average price for fats and oils in the institutions in the Northeast reflects greater use of the more expensive fats, such as butter and margarine, than in institutions in the South which used cheaper pork fats, such as lard and salt pork. This difference is customarily found in family surveys also and stems from regional differences in food habits.

The children's institution in the Southeast spent an average of 5 and 6 cents a pound for "citrus fruits, tomatoes" compared with 12 cents in the old-age institution in the same region. This higher figure was due to use of canned grapefruit sections valued at 16 cents per pound compared with fresh grapefruit at 3 cents. On an edible portion basis, these values were, of course, much closer, and it is understandable that the cottages could prepare fresh grapefruit while in large institutions this would mean considerable labor cost.

The children's institution in the Southeast paid an average of 14 to 19 cents per pound more for "meat, poultry, fish" than the children's institution in the Northeast, due mainly to the choice of more expensive meats. In the Southeast institutions, 37 and 47 per cent respectively of the total quantity of "meat, poultry, fish" issued cost 51 cents per pound or more, but only 5 per cent of the "meat, poultry, fish" in the Northeastern children's home cost that much.

TABLE 6

Money value per pound of food group in four institutions, 1953–54

FOOD GROUP	MONEY VALUE				
	Old-age institutions		Children's institutions		
			Southeast		Northeast
	Southeast	Northeast	Boys' cottage	Girls' cottage	
	cents/lb.	*cents/lb.*	*cents/lb.*	*cents/lb.*	*cents/lb.*
Leafy, green and yellow vegetables	9.9	7.6	9.0	9.8	6.1
Citrus fruits, tomatoes	12.4	10.8	6.5	5.4	7.8
Potatoes and sweet potatoes	7.2	1.6	8.3	4.5	1.3
Other vegetables and fruits	14.9	9.1	12.4	14.2	7.3
Milk, cream, ice cream, cheese	7.0	7.7	10.9	10.0	7.8
Meat, poultry, fish	47.4	37.4	46.5	51.4	32.4
Eggs	36.3	50.2	36.5	34.4	48.9
Dry beans and peas, nuts	26.6	12.8	17.6	37.9	19.5
Flour, cereals, baked goods	16.3	14.7	20.2	23.9	16.3
Fats, oils	35.1	53.1	23.3	26.9	42.6
Sugars, sweets	18.2	11.7	14.1	16.1	13.0
Miscellaneous	57.6	45.7	37.7	37.7	19.8

The difference in egg prices reflected in part seasonal price changes. The children's institution in the Southeast was studied in the winter of 1953; the children's institution in the Northeast, in September

of that year. Both old-age institutions were studied in the summer, the one in the Northeast in 1953, and the one in the Southeast in 1954. Egg prices were considerably lower in 1954 than in 1953.

Summary

The money value of the food in four institutions studied in 1953–54 was found to be 56 to 83 cents per person per day. When adjusted for differences in calorie needs of the residents, three of the four had similar food costs. The fourth, an institution for aged persons in the Southeast, had considerably higher food costs. Except in the latter institution, the money value per person of the food issued was approximately the same as or lower than that of food of low-income families in cities in the same region.

Food losses in the three large institutions (from 90 to 804 persons) amounted to from about one-fifth to one-fourth of the total money value of the food issued. In the smaller institution (fifteen residents in each of two cottages), the losses were much less, only 5 to 6 per cent. Plate waste accounted for a large share of the total in all institutions—over a half in two of the three large institutions where total losses ran high. The money value of all the food lost amounted to from 12 to 22 cents per person per day in the three large institutions. Granted that some such loss is unavoidable, the potential savings that could be accomplished by reducing it are considerable. On a one-month basis, a loss of 12 to 22 cents a person a day adds up to $360 to $660 for 100 people.

The division of the institution food dollar was roughly similar to that of the family food dollar, indicating that these institutions follow the same general pattern of food consumption as do families free to follow the tastes and preferences of their members. The "milk, cream, ice cream, cheese" and "meat, poultry, fish" groups together made up about half of the institutions' food budgets, a little more than in the families. Slightly more emphasis on milk in the institutions' plans may be accounted for by the fact that two of the four were children's institutions.

Money value per pound of the food groups varied widely among the four institutions, sometimes because of selections within the groups and sometimes because of the prices paid for foods or the money value assigned to home-produced or donated food. Purchased food was augmented by donated food in all four institutions and by home-produced food in two of the institutions.

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Standards for Advertising and Selling Weight-Reducing Products

In the interest of avoiding public deception and maintaining public confidence in the integrity of advertising, the National Better Business Bureau has drawn up the following "Recommended Minimum Standards for Advertising and Selling of Alleged Weight-Reducing Products Involving 'Plans.'"

(1) Advertising an alleged weight-reducing product should clearly and conspicuously disclose that use of the product involves a "plan" when such is the case.

(2) Advertising of an alleged weight-reducing product for use as a part of a "plan" should not state or imply that use of the product alone will cause weight reduction, when such is not a fact.

(3) Advertising of a *product* for weight reduction which constitutes part of a "plan" or "method" should clearly reveal that a restricted diet is a part of the plan, when such is the case. The National Better Business Bureau believes that any broadcast or printed advertisement which fails to disclose this basic fact conceals material information to which the public is entitled.

(4) Advertising of reducing plans calling for adherence to low-calorie diets should not represent them as "easy" or as enabling reducers to "eat all you want," "eat the foods you want," etc.

(5) Advertising should not make appetite-curbing or hunger-appeasing claims for substances not recognized as possessing those values, unless such claims are supported by competent proof in the form of carefully controlled clinical studies which establishes that:

(a) obese users of the product are thereby enabled to adhere to the low-calorie diet prescribed or essential for weight reduction without experiencing hunger and its attendant discomforts; and

(b) use of the product as prescribed will not be injurious to the health of users.

(6) Advertising should avoid exaggerated and deceptive claims of specific weight losses within specified periods.

(7) Advertising claims for weight-reducing products and plans should be consistent with labeling and instructions for use accompanying the product.

Effect of Salt on Ascorbic Acid in Cabbage During Cooking[1]

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SOME recent studies dealing with the loss of ascorbic acid from vegetables during cooking have involved the amount of water used, the cooking method used, and the effect of sodium chloride. Fisher and Dodds (1) reported that cabbage cooked in a small amount of water contained more ascorbic acid than that cooked in large quantities of water. Krehl and Winters (2) found that cabbage retained the greatest amount of ascorbic acid when pressure cooked and the least when cooked in water to cover. In Høygaard and Rasmussen's study (3), the addition of salt reduced the destruction of ascorbic acid 14 per cent when vegetables were boiled. They always added the vegetables to the water after it had started to boil.

The present study was planned to determine the effect of sodium chloride on the rate of oxidation of ascorbic acid in family-sized quantities of cabbage when boiled in glass and in stainless steel utensils. Cabbage was chosen to be studied because it is a good source of ascorbic acid, and because it is an inexpensive and available the year around.

Experimental Procedure

Cabbages for these tests were purchased at a local store. The varieties were not identified. To eliminate variation from head to head, one large cabbage (about 3 lb.) was used for each series of tests.

In preparing the cabbage, the outer damaged leaves and the core were discarded. The edible portion was then cut into pieces (about 1 by 1½ in.), using a stainless steel knife on glass.

Four hundred gm. raw cabbage and 200 ml. distilled water were put into a 1½-qt. stainless steel saucepan. The pan and its contents were weighed and placed on a heated electric unit. No salt was added. The water began to boil in about 4 min. After a total of 10 min., the pan and contents were reweighed and the water which had been lost through evaporation was replaced. Twenty-five gm. cooked cabbage and 12.5 ml. cooking water were then removed and were analyzed together for ascorbic acid. The remaining cabbage was returned to the stove immediately for further cooking. Samples were again removed in the same way after cooking 20 min., 40 min., 80 min., and 160 min.

Simultaneously, a second 400-gm. portion of cabbage was cooked in 200 ml. water in the same manner, but with the addition of 3 gm. sodium chloride at the beginning. Samples were taken from this lot in the same way as from the first pan. This procedure of cooking, both with and without salt, was carried out on five different days using stainless steel utensils and on five other days using Pyrex glass utensils nearly identical in size and shape to the stainless steel.

Each sample of cooked cabbage and its cooking water was put into a Waring Blendor with 162.5 ml. of 1.08 per cent metaphosphoric acid solution (to make a final 1 per cent solution) and blended for 5 min. The slurry was filtered and the filtrate analyzed by the 2,6-dichlorophenolindophenol dye method (4), using a Coleman Junior spectrophotometer employing light of wave length 520 millimicrons. A standard curve based on 15 concentrations of ascorbic acid, ranging from zero to 70 mcg. per 100 ml., was used in converting the readings into vitamin values. Two 50-gm. raw samples from each cabbage were analyzed by the same procedure.

To estimate the possible effect of sodium chloride on the ascorbic acid in the cabbage before it reached the boiling point, a sample of raw cabbage was held in salted, distilled water at room temperature for 4 min. (the approximate time required for the cabbage and water to come to a boil) and then analyzed for ascorbic acid. A control sample in distilled water without salt was treated similarly.

Results and Discussion

After 10, 20, and 40 min. cooking there was about 10 per cent less retention of ascorbic acid when salt

[1] Condensed from a thesis submitted by Georgianna R. Walker in partial fulfillment of the requirements for the degree of Master of Science, University of Connecticut. Received for publication March 8, 1956.

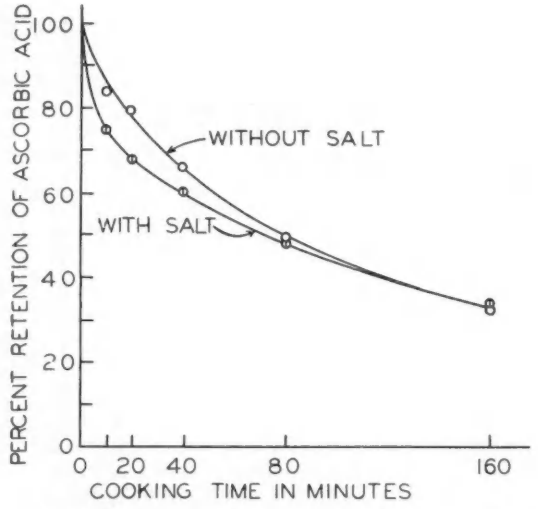

Fig. 1. Influence of sodium chloride on ascorbic acid retention when cooking cabbage. Each point is the average of ten determinations, five in stainless steel utensils and five in Pyrex glass utensils.

was present (Fig. 1 and Table 1). A t-test revealed that, after all three cooking periods, the difference in rate of loss was significant, with $P < 0.001$ after 10 min. and P between 0.01 and 0.001 after the 20- and 40-min. periods. The increased loss of the vitamin due to the presence of salt was, on the average, greater in the Pyrex than in the stainless steel utensil (Table 1) for the shorter cooking periods, although this difference was not consistent. Little difference in ascorbic acid retention due to presence or absence of salt or to type of container was found after 80 min. and after 160 min. of cooking.

The greater loss during the first 10 min. when salt was present (25 per cent as compared with 16 per cent when no salt was present) suggested that, in the presence of salt, some of the ascorbic acid may have been destroyed before the cooking began. The tests on raw cabbage samples held in salted water at room temperature for 4 min. indicated that during this time the cabbage lost 13 per cent of its ascorbic acid. The control sample in distilled water without salt showed no appreciable loss in the 4 min. This indicated that about half of the loss in ascorbic acid during the first 10 min. of cooking when salt was present occurred before the water boiled. This accounts for the difference in rate of loss during the first 10 min. of cooking in the presence of salt. After this initial loss in the salted samples, there seemed to be little difference in the rate of loss of ascorbic acid during boiling with or without salt.

Summary

Samples of cabbage weighing 400 gm. were each placed in 200 ml. distilled water at room temperature and brought to a boil, with or without the addition of 3 gm. sodium chloride. The ascorbic acid loss in the cabbage after 10, 20, and 40 min. of cooking was found to be about 10 per cent greater when salt was present. After cooking for 80 and 160 min., the ascorbic acid retention of the cabbage was the same whether or not sodium chloride was present. The greater loss of ascorbic acid with sodium chloride occurred before boiling began. A slight but inconsistent difference was noted due to type of container (Pyrex glass as compared with stainless steel).

It is, therefore, suggested that, when cabbage is boiled in water, the sodium chloride, if used, be added after the water has returned to a boil.

TABLE 1

Ascorbic acid retention in cabbage cooked in stainless steel and in Pyrex glass utensils with and without sodium chloride†*

COOKING TIME	ASCORBIC ACID RETENTION	
	With salt	Without salt
Cooking in Stainless Steel Utensils‡		
min.	%	%
10	79.9 ± 2.8§	86.2 ± 1.6§
20	73.2 ± 2.6	80.1 ± 0.9
40	62.7 ± 1.1	67.0 ± 2.2
80	46.3 ± 2.2	47.3 ± 1.9
160	32.3 ± 3.8	31.4 ± 3.4
Cooking in Pyrex Glass Utensil‡		
10	69.7 ± 3.7	81.5 ± 3.2
20	63.0 ± 7.0	79.2 ± 4.5
40	58.3 ± 4.3	65.6 ± 3.7
80	51.4 ± 3.4	50.1 ± 5.1
160	35.7 ± 5.7	35.7 ± 6.9
Average for Cooking in Both Types of Utensils‖		
10	74.8 ± 2.2	83.9 ± 1.6
20	68.1 ± 3.5	79.6 ± 2.2
40	60.5 ± 2.1	66.3 ± 2.1
80	48.4 ± 1.9	48.7 ± 2.6
160	34.0 ± 3.2	33.5 ± 3.6

* 400 gm. raw cabbage cooked in 200 ml. distilled water.
† 3 gm. sodium chloride for each 400-gm. portion of cabbage.
‡ 5 determinations.
§ Standard deviation.
‖ 10 determinations.

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Clinical and Biochemical Studies of Montana Adolescents[1]

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As A part of nutritional status studies in Montana, clinical and biochemical studies were conducted for 222 native-born and -reared fifteen-year-old students from two areas in Montana: Bozeman, where the survey took place in the summer, and Great Falls, which was surveyed in early fall. This paper is a report of the observations obtained from physical examinations and of the whole blood or blood serum values for vitamin A, carotene, ascorbic acid, riboflavin, alkaline phosphatase, cholesterol, protein, hemoglobin, red and white cell counts, volume of packed red cells, and sedimentation rates. Nutrient intakes, food habits, and dental caries experience of these students have been previously reported (1, 2).

Experimental Procedure

Fifty-six boys and 56 girls from the Bozeman area and 54 boys and 56 girls from the Great Falls area reported at ½-hr. intervals to clinics established in each city for physical and dental examinations. Written approval had been obtained from the students' parents for participation in this and other phases of the survey. Also, these students were personally interested in serving as active cooperators in the project. Students with known systematic disorders or special dietary regimens were excluded from the survey. Other details of subject selection have been described in previous reports (1, 2).

All subjects had consumed no food for at least 4 hr. prior to the taking of the blood sample. Blood samples were obtained by venipuncture by a registered technician upon the students' arrival at the clinic. Milk, fruit, cheese, and bread were served to the subjects before the physical and dental examinations.

CLINICAL AND BIOCHEMICAL METHODS

Physical examinations were conducted by two physicians who had worked with Dr. Harold R. Sandstead of the U. S. Public Health Service in preliminary clinics to identify and define physical signs possibly related to nutritional status for these subjects (3). Comprehensive medical histories were also obtained to indicate further the physical health for each subject.

Blood samples of approximately 10 ml. were divided into two portions; one portion for analyses for hemoglobin, red and white cell counts, volume of packed red cells, and sedimentation rate which were performed by our staff at the clinic laboratories, and one portion which was processed under appropriate conditions for serum analyses and placed in frozen storage at −20°C. for later analysis in the experiment station laboratories. For the latter, samples were packed in thermos jugs with dry ice and shipped by rail or air to the analyzing laboratory. No thawing or refreezing occurred with any of the samples between the time of original freezing and analysis.

For vitamin and alkaline phosphatase estimations, duplicate samples of serum for each subject were analyzed on separate days. Approximately two months later a third series of samples was analyzed

[1] This study was a part of the Western Regional Research Project on the nutritional status of population groups in selected areas of Montana under the direction of the Montana Agricultural Experiment Station. It was financed, in part, from funds appropriated under the Research and Marketing Act of 1946. Contribution from Montana State College Agricultural Experiment Station, Paper No. 382, Journal Series. Received for publication March 29, 1956.

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TABLE 1

Blood values of adolescent Montana students

BLOOD CONSTITUENT	BOYS*		GIRLS	
	Mean	Range	Mean	Range
Serum vitamin A (mcg./100 ml.)	52 ± 0.8‡	34–75	48 ± 0.9	30–78
Serum carotene (mcg./100 ml.)	129 ± 5.7	40–308	132 ± 5.2	38–286
Serum ascorbic acid (mg./100 ml.)	1.1 ± 0.44	0.3–2.0	1.2 ± 0.37	0.3–1.9
Serum riboflavin				
Free (mcg./100 ml.)	0.64 ± 0.034	0.12–2.11	0.72 ± 0.042†	0.09–2.88†
Total (mcg./100 ml.)	1.82 ± 0.045	1.03–3.36	1.71 ± 0.056†	0.58–4.01†
Serum cholesterol				
Free (mg./100 ml.)	32 ± 0.6	16–52	34 ± 0.7	16–63
Total (mg./100 ml.)	133 ± 2.6	76–222	144 ± 2.5	93–235
Alkaline phosphatase (nitro-phenol units/100 ml.)	4.34 ± 0.141	1.60–8.41	1.92 ± 0.068	0.94–6.25
Serum protein (gm./100 ml.)	6.8 ± 0.05	5.6–8.5	6.6 ± 0.05†	5.2–8.2†

* Data for 109 boys and 109 girls.

† Data for 108 girls only.

‡ Standard error of the mean.

to assure that there were no changes in serum levels of the test constituent during the storage and testing period. Portions of a composite standard serum sample were also analyzed for each constituent at intervals throughout the storage and testing period. Results for each serum constituent of each subject and the standard serum sample were consistent.

A Beckman DU spectrophotometer adapted for micro analyses was calibrated for maximum wave length absorption with series of standard solutions for vitamin A, carotene, ascorbic acid, and alkaline phosphatase determinations. A Leitz colorimeter, checked with both the Beckman spectrophotometer and an Evelyn colorimeter, was standardized for hemoglobin analysis. Riboflavin analyses were determined with a Farrand microphotofluorometer.

Serum or whole blood samples were analyzed by the following methods: vitamin A and carotene—Bessey *et al.* (4); ascorbic acid—Lowry, Lopez, and Bessey (5); riboflavin—Burch, Bessey, and Lowry (6); cholesterol—Schoenheimer and Sperry (7) and Sperry (8); hemoglobin and volume of packed red cells—Wintrobe (9); and protein—Kagan (10). Sedimentation rate, red and white cell counts, and cell characteristics as indicated by blood smears using Wright's stain were determined by methods described by Wintrobe (9). For the serum alkaline phosphatase analyses (Bessey, Lowry and Brock [11]), the substrate was prepared by a modification of the method of King and Nicholson (12), including the use of a neutralizing solution of 10 per cent sodium hydroxide instead of saturated barium hydroxide. This substrate was checked with comparable substrates prepared in two other laboratories. Urinary sugar and albumin levels were estimated by use of indicator tablets.

Results and Discussion

Physical examinations were completed for 222 subjects, 112 girls and 110 boys. The observations are discussed below on an over-all basis and as they may be related to biochemical findings. For a few of the subjects who reported for the physical examinations it was not possible to obtain adequate amounts of blood for all of the proposed biochemical analyses. Values for the mean, range, and standard error for blood serum levels of vitamin A, carotene, ascorbic acid, riboflavin, cholesterol, alkaline phosphatase, and protein are given in Table 1; for hemoglobin, red and white cell counts, volume of packed red cells, and sedimentation rates, in Table 3. Table 2 indicates the percentage distribution of levels of the blood serum vitamin A, carotene, and ascorbic acid and of hemoglobin in relation to the levels of nutriture as suggested by Bessey and Lowry (13).

Pertinent observations on possible relationships between nutrient intake, physical examinations, and biochemical findings are discussed below; more detailed information on nutrient intake and food habits has been previously presented in this JOURNAL (1).

PHYSICAL EXAMINATION FINDINGS

Observations of the examining physicians for physical signs generally associated with nutritional status were recorded as absent or occurring in three grades of severity: mild, moderate, or severe (3). For this paper, only the most commonly observed symptoms are reported and the degree of severity has been omitted. Significant occurrences were observed for only a few of the criteria and for these the degree of severity was generally "mild."

The examining physicians rated twenty students (9 per cent) "poor" or "fair" in general appearance. The general appraisal was not related to the presence of any more specific physical observation except acne. One-fifth of the students who had acne were appraised as being "fair" or "poor" in general appearance. One-fourth of the subjects were 10 per cent or more above the "normal" weight for the individual,

while one-fourth were 10 per cent or more below. In height, these fifteen-year-old girls ranged from 60 to 70 in., mean 64; boys ranged from 58 to 73 in., mean 67. For these adolescents information on the normal range of growth in weight and height through the developmental period was not available.

The physical lesions most frequently observed for these students were increased vascularity of the bulbar conjunctiva, 23 per cent; inflammation of the palpebral conjunctiva, 13 per cent; acne, 19 per cent; gingivitis, 17 per cent; naso-labial seborrhea, 16 per cent; folliculosis, 13 per cent; hyperkeratosis, 9 per cent; blepharitis, 5 per cent; crusted eyelids, 4 per cent; and 3 per cent or less of other symptoms. The conjunctiva symptoms were observed predominately in one area where many of the students were using a chlorinated swimming pool in which the *pH* was frequently reported to be low. The appearance of physical signs of sub-clinical malnutrition was not consistently related to nutrient intakes or blood serum levels. However, a majority of the subjects having one or more physical signs of lower nutrient intake were below the group mean in intake or blood serum levels of one or more nutrients.

There was little co-occurrence of physical signs generally associated with low intakes of a specific nutrient. However, calculations of nutrient intake for these students indicated that if the diets contained less than two-thirds of the recommended dietary allowances for any one nutrient, low nutrient intake levels of one or more other nutrients were generally co-occurring (1).

Glucose was not evident in any urine samples; trace amounts of albumin were found in urine samples of seven girls.

VITAMIN A AND CAROTENE

Mean serum levels of 48 and 52 mcg. vitamin A per 100 ml. were determined for girls and boys respectively (Table 1). No students had serum levels below 30 mcg. per 100 ml., a level suggested as indicative of "good" vitamin A nutriture by Bessey and Lowry (13). These Montana values were somewhat higher than values for similar age groups as reported from other laboratories (14–17); however, the dietary intake level of vitamin A for these students (1) was also generally higher than that noted in similar studies.

Carotene levels of the blood serum were below 125 mg. per 100 ml. for 53 per cent of the girls and 54 per cent of the boys and might be classified as "fair" or "poor" in level of nutriture as indicated by Bessey and Lowry. However, it is recognized that carotene levels of the blood serum are quite labile and may tend to reflect recent carotene intake levels. These serum carotene levels were within suggested ranges of normalcy and generally exceed those of other studies (14, 15, 17) with one exception (16). Students whose serum levels of carotene were low were also more likely to be classified among those having less than the mean levels of hemoglobin, serum riboflavin, and/or ascorbic acid.

TABLE 2

Percentage distribution of levels of blood serum vitamin A, carotene, and ascorbic acid, and of hemoglobin of adolescent Montana boys and girls

BLOOD CONSTITUENT	BOYS			GIRLS		
	Bozeman	Great Falls	Total	Bozeman	Great Falls	Total
	%	%	%	%	%	%
Serum vitamin A						
30–49 mg./100 ml.	29	53	41	46	74	61
50 mg./100 ml. and above	71	47	59	54	26	39
Serum carotene						
Below 75 mg./100 ml.	4	30	16	4	18	11
75–124 mg./100 ml.	25	51	38	22	62	42
125–199 mg./100 ml.	46	19	33	46	16	31
200 mg./100 ml and above	25	0	13	28	4	16
Serum ascorbic acid						
Below 0.4 mg./100 ml.	0	17	8	0	5	3
0.4–0.6 mg./100 ml.	4	21	12	2	15	8
0.7–1.0 mg./100 ml.	9	36	22	11	20	16
1.1 mg./100 ml. and above	88	26	58	87	60	73
Hemoglobin						
Below 11.0 mg./100 ml. (girls)				0	2	1
Below 12.0 mg./100 ml. (boys)	2	2	2			
11.0–12.9 mg./100 ml. (girls)				27	11	19
12.0–13.9 mg./100 ml. (boys)	18	8	13			
13.0–13.9 mg./100 ml. (girls)				44	36	40
14.0–14.9 mg./100 ml. (boys)	39	14	27			
14.0 mg./100 ml. and above (girls)				29	51	40
15.0 mg./100 ml. and above (boys)	41	77	58			

Mean serum vitamin A levels were slightly lower for the girls than for the boys; mean serum carotene levels were slightly higher for the girls. The total vitamin A intake for the girls was lower than for the boys, 5170 and 6990 I.U. per day respectively, of which 40 per cent was preformed vitamin A for the girls, 50 per cent for the boys. The correlation between serum vitamin A and carotene for all students was positive and significant at the 1 per cent level ($r = 0.359$). For all subjects there was only a slight positive relationship between vitamin A intake and serum level of vitamin A ($r = 0.098$).

The serum vitamin A and carotene levels for the Bozeman students surveyed in summer were consistently higher than those for the Great Falls students surveyed in early fall. These differences in serum values were probably a reflection of differ-

ences in food habits and the seasonal availability of fruits when the dietary intake records were obtained.

Folliculosis, acne, hyperkeratosis, and blepharitis have been suggested as related to low vitamin A intakes, especially if these symptoms co-occur. For these Montana subjects, 19 per cent were reported as having acne; 13 per cent, folliculosis; 9 per cent hyperkeratosis of the elbow and/or knee; and 5 per cent blepharitis. Co-occurrence of two or more of these symptoms was noted for 11 subjects, with folliculosis in combination with acne for 6, and with hyperkeratosis for 5. For three subjects, three of these symptoms were evident, but there was no uniformity in the co-occurrence pattern. As reviewed and reported by Merrow and co-workers (16), with reference to vitamin A nutritional status, lack of correlation between certain biochemical and clinical findings is wide spread. It is well recognized that the symptoms, particularly acne, as observed in this study are generally non-specific and at best serve only as possible indicators of low nutrient intake.

ASCORBIC ACID

The mean serum ascorbic acid level for the girls, 1.2 mg. per 100 ml., was similar to that for the boys, 1.1 mg. (Table 1). Approximately twice as many of the boys had serum ascorbic acid levels below 0.7 mg. per 100 ml. as did the girls (Table 2) and might be classified as having a "fair" or "poor" level of ascorbic acid nutriture (13). More of the Great Falls subjects had serum ascorbic acid levels below 0.7 mg. per 100 ml. than did the Bozeman students. Ascorbic acid intakes in Bozeman and Great Falls were significantly different with a mean intake of 82 mg. per day for Bozeman students and 65 mg. for Great Falls; this was attributed, in part, to seasonal availability and selection of food items (1).

Serum ascorbic acid levels were considerably higher than those reported by other workers (14–17), although intake levels of ascorbic acid were sometimes higher than those of the Montana students. Ascorbic acid serum levels were positively related to ascorbic acid intakes at the 1 per cent level of significance ($r = 0.367$) for all students.

Of the thirty-four students who had serum ascorbic acid levels below 0.7 mg. per 100 ml., twenty also had low serum vitamin A values and sixteen had low serum riboflavin levels.

Frequently serum carotene and serum ascorbic acid levels have been found to be correlated and again in this study there was a positive relationship at the 1 per cent level along with a positive relationship between serum levels and the intakes of these nutrients. Quite possibly this may be related in turn to the fact that many foods which provide significant quantities of carotene also provide significant quantities of ascorbic acid.

Physical signs generally associated with low ascorbic acid intakes could not be directly associated with either serum levels or dietary intakes of ascorbic acid, for the number of observed syndromes was limited. Seventeen per cent of all subjects had evidence of gingivitis; one subject had perifollicular petechiae. Twenty-one per cent of those who had gingivitis also had folliculosis.

RIBOFLAVIN

Total serum riboflavin levels for students (Table 1) were considerably lower than those reported by other workers (17–19), although free serum riboflavin levels were similar. Serum flavin-adenine-dinucleotide levels have been reported as a more sensitive indication of riboflavin nutriture than free riboflavin (19). Riboflavin was the only nutrient studied for which the Bozeman students, both boys and girls, had lower serum levels than the Great Falls students. The mean free riboflavin values for the two areas were similar, 0.72 ± 0.070 and 0.70 ± 0.038 for the Great Falls and Bozeman students, respectively. Mean total riboflavin serum levels were somewhat higher in Great Falls than in Bozeman, 1.84 ± 0.063 and 1.68 ± 0.052 respectively. Mean riboflavin intakes in the two areas were slightly higher in Great Falls than in Bozeman, 2.4 and 2.2 mg. per day respectively.

There was a positive relationship between riboflavin intake and total serum riboflavin levels for all subjects. This was not the case, however, with free serum riboflavin. There appeared to be no distinct relationship between riboflavin levels of the blood serum and other blood constituents studied, except that for those subjects whose serum riboflavin levels were below the group mean, the hemoglobin levels were also more likely to be below the group mean.

Although certain physical lesions often associated with riboflavin deficiency are not pathognomonic, their occurrence in conjunction with low serum levels and low dietary intakes of riboflavin may be considered indicative of poor riboflavin nutriture. Of these, naso-labial seborrhea was reported for 35 subjects; stomatitis for 8; blepharitis for 10; circumcorneal injection for 4; and outer canthi lesions or magenta tongue for 1 subject each.

Naso-labial seborrhea, the most frequently occurring of these lesions, was observed in conjunction particularly with acne. For only nine subjects did two of these often related lesions occur simultaneously. For three subjects, there was a co-occurrence of blepharitis, angular stomatitis, and naso-labial seborrhea. In addition, increased vascularity of the bulbar conjunctiva was reported for approximately 23 per cent of all subjects and inflammation of the palpebral conjunctiva for 13 per cent. This was quite possibly related to environmental conditions in one area. Five or less students were reported as having hypertrophy, atrophy (filliform or fungiform) or fissuring of tongue papilliae, although one subject was checked as having all signs. The small

TABLE 3

Values for hemoglobin, red and white cells, volume of packed red cells, and sedimentation rate for adolescent Montana students

BLOOD CONSTITUENT	BOYS		GIRLS	
	Mean	Range	Mean	Range
Hemoglobin (gm./100 ml.)	15.2±0.13†	10.5–20.0	14.0±0.14	10.8–19.1
Red cells (millions/cu.mm.)	5.6±0.06	3.8– 6.9	5.1±0.05	3.5– 6.4
White cells (thousands/cu.mm.)	7.4±0.20	4.4–18.2	8.0±0.24	2.6–16.6
Volume of packed red cells (ml./100 ml.)	48.2±0.28	39.5–55.0	44.9±0.33	35.5–60.0
Sedimentation rate (mm./hr.)	6.3±0.48	0.2–25.0	12.8±0.76	1.0–36.0

* 108 boys, 110 girls.

† Standard error of the mean.

number of students with co-occurring lesions often associated with low riboflavin intakes precluded the study of relationships between clinical lesions and blood serum levels or nutrient intake.

PHOSPHATASE

A highly significant sex difference was observed in serum alkaline phosphatase measurements with an average of 4.3 nitrophenol units for the boys and 1.9 units for the girls (Table 1). A majority of the girls examined had attained pubescence and as a result showed adult phosphatase levels; most of the boys were still showing the high phosphatase levels generally considered characteristic of rapid bone growth. Within a calculated range of normalcy for these students (mean ± 2 S.D.), no students had serum values below this range, while three girls and two boys had levels which exceeded the upper levels of this range. No levels were so high nor so low as those generally indicative of active rickets, scurvy, or other pathology. The serum phosphatase levels of these students were within the lower ranges reported by other laboratories (13, 14, 20) for subjects of the same age. Within the sex groups there was an inverse relationship between serum alkaline phosphatase and calcium intake among those students who were consuming two-thirds or less of the Recommended Dietary Allowances for calcium.

CHOLESTEROL

Serum cholesterol levels (Table 1) were well within the range of normalcy reported from other laboratories (17, 21, 22). Approximately three-fourths of the cholesterol appeared in the combined form, one-fourth as free cholesterol. Serum cholesterol values for the girls were somewhat higher than those for the boys, although cholesterol intake of the boys was about double those of the girls, 738 ± 27 and 471 ± 44 mg. per day respectively. Comparisons of these data with others recently published for an older age group (23) indicate that the ratio of free to total cholesterol for the two age groups may be relatively constant, although the actual free and total cholesterol levels may vary with age.

OTHER FINDINGS

Although the mean values for hemoglobin (Table 3) were similar to the standard means and ranges reported by the National Research Council (24), the mean level and range were higher than those generally reported for similar surveys with this age group (14, 15, 25). These students were living at altitudes of 4000 to 5000 ft., and hence some increase in hemoglobin level over that observed at sea level might have been expected.

Mean hemoglobin levels were significantly lower in Bozeman than in Great Falls for girls, 13.5 ± 0.12 and 14.6 ± 0.25 respectively and for boys 14.6 ± 0.14 and 15.7 ± 0.21 respectively. Also, in Bozeman, 27 per cent of the girls were below 13 gm. per 100 ml. and 20 per cent of the boys below 14 gm. per 100 ml. (Table 2)—levels considered indicative of less than "good" nutrition by Bessey and Lowry (13). In Great Falls, 13 per cent of the girls and 10 per cent of the boys had hemoglobin levels below these levels. Considering the altitude at which these students were living, the low hemoglobin values observed for the girls were of particular concern. Eighty per cent of the students who were below the group mean in hemoglobin values were also below the group mean in riboflavin level of the blood serum and smaller percentages were low in other factors. Iron intake and hemoglobin level were correlated at the 1 per cent level of significance (r = 0.300) for all students.

Generally, red and white blood cells counts and volume of packed red cell values (Table 2) were well within the ranges for normalcy (24).

Sedimentation rates (Table 3) were very high for a few of the students: similar findings for girls of this age group have been reported (25). Normocytic white blood cells were observed for all subjects; however, hypochromic red blood cells were reported for seventeen subjects.

Serum protein values were generally within the accepted ranges of normalcy. No relationship was evident between serum protein and hemoglobin or riboflavin levels.

Summary

As a part of the Montana nutritional status researches to provide information on the possible influences of dietary and environmental conditions on physical health and well-being, physical examina-

tions and biochemical studies were completed for Montana-born and -reared fifteen-year-old students from the Bozeman and Great Falls areas.

Physical symptoms, often associated with low nutrient intakes, as reported for these students, included: increased vascularity of the conjunctiva, acne, gingivitis, naso-labial seborrhea, folliculosis, and hyperkeratosis for 23 to 9 per cent of the subjects, with some other lesions observed in a small number of cases. Few students exhibited two or more lesions generally associated with low intakes of any specific nutrient, and the physical lesions observed were not consistently related to low serum levels or low dietary intakes of any specific nutrient. Low blood or blood serum levels of hemoglobin, carotene, ascorbic acid, or riboflavin were reported most frequently for these students.

There were generally trends toward positive relationships between nutrient intake and serum levels. However, when only those students whose intakes were below two-thirds of the Recommended Dietary Allowances or the mean of the group were included in the tabulations, the relationship was strengthened.

Means and ranges for blood or blood serum levels for vitamin A, cholesterol, alkaline phosphatase, protein, and for red and white cell counts, volume of packed red cells, and sedimentation rates were within reported ranges of normalcy.

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A.D.A. Membership

On May 31, 1956, The American Dietetic Association had a recorded membership of 11,940. Of these, 41 were men.

Current Comment

Emotional Aspects of Feeding the Aged[1]

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WE ARE all aware that older people regress into the past because the future looks dim and the present is unsatisfactory. This is done with food as well as in other areas. Whatever you ate when you were young and strong and came home tired from work was good and satisfying. However, with age, there is little activity or purpose and no real interest in or appetite for food. Men particularly identify food with the way it tasted when their wives cooked it in their own homes. How, then, can food served by a strange woman and not prepared by their wives possibly be as satisfying?

Older people like to be "given to" in the literal sense of being "waited on." In this respect food is important, and they look forward to their meals. A good meal can be a high point in an entire day. A Sunday dinner, ice cream for supper, or a holiday specialty may brighten up the day and add a festive note to what might otherwise be a very dull ordinary day.

To put it simply, giving an old person good, tasty, food means "I care about you." "I want you to live, and you are important to me." Therefore, when an old person complains about food served to him, the one who served it should not necessarily be discouraged and feel that the patient does not know what he wants, is hard to satisfy, and therefore that trying to please him is not worth the effort. Such reactions may serve as a plea for more recognition and more attention and a plea that should be answered if at all feasible.

Wherever possible, one should cater to the individual likes and dislikes of the patients. Flexibility within the bounds of institutional management should be the policy. At least slight substitutions, such as a choice of bread or beverage, can be provided, making patients feel that their wishes are important and that they have some value to someone.

Some older people cannot express appreciation in acceptable terms. To such people, it is painful for them to be recipients in any area. Instead of accepting food graciously, they may show their complete rejection of their whole state of dependency by rejecting the food. Underneath, they really may be grateful but be unable to express their gratitude in pleasurable terms. We all realize that no one is difficult or hostile or irritable by choice. Life and living have brought this about. If we who serve these people are tolerant and understanding of the whole life pattern and appreciate that frustrations may be displaced onto the food, we will be less likely to react hostilely to a seemingly hostile pattern.

For example, when patients complain constantly about food and never seem satisfied, if you—the person who prepares and serves it—know that it is good food, pleasantly served and attractively placed on a tray, then you need not be concerned about the complaints. It should be of concern, however, if you know that to you, yourself, the food is unattractive and merely something you feel would fill the stomach of the aged patient; he, too, will feel that way—and reject it.

What is more, people who are cared for by others, and the older person is no exception, sense and feel when they are wanted and when they are rejected. Food carelessly prepared and served unattractively indicates a lack of love and interest, both literally and symbolically, and the older person is keenly, if subconsciously aware of this. To all of us, food has the attributes of being body-building, therapeutic, and love-giving. Food is a form of affection that you bestow on people. Of all the experiences that we can have from birth until death, the deepest one centers around food. When people lose their interest in food it is pathologic and serious because it means that they are directing their hostility inward and wish to destroy themselves.

The expression, "the way to a man's heart is through his stomach" should perhaps read, "the way to a man's stomach is through his heart." His feelings, his emotions, his attitudes, his prejudices, and his food habits are all avenues of reaching him. The dietitian should concern herself as much with the personality of the individual with whom she is dealing as with what she has to offer. She must learn to listen carefully to what patients want; otherwise she may offer an individual a menu or a diet which he does not eat and which, consequently, while nutritious, does not nourish.

Factors Affecting Food Preferences

Stop sometimes to think about why a person refuses to eat what is good for him. Why does he like certain foods and dislike others? Where do

[1] Presented at a workshop sponsored by the Chicago Heart Association at the Catherine Booth Hospital and Clinic, Chicago, on March 13, 1956.

people get their peculiar (to you) ideas about food? One explanation might be that they associate their preferences with pleasant experiences. For example, food introduced at a time in their lives when they were feeling good and there was a pleasant association is to them a food that is liked forever; contrarywise, a food first served under unpleasant circumstances is always associated with disappointments and may be disliked.

There is also cultural conditioning in connection with food. As children, all of us were given certain foods on holidays which we associated with our parents' religious and cultural background. It is, therefore, difficult even for mature adults to adopt new foods and to like them when they have not been introduced at an acceptable time or in an acceptable manner. It may be necessary with older people, for example, to introduce new food very slowly, as with children, in small servings at first, and after some psychologic preparation. Otherwise, the food may not be eaten—and thus, although appearing on the written menu, it will not provide the minerals and vitamins you planned. To achieve food acceptance, it is important in nursing homes or institutions of any kind to try to meet some of the cultural likes and dislikes of patients. At the Orthodox Jewish Home for the Aged, we serve not only kosher food but food of a kind and with a choice of seasoning that is customarily eaten by the Jewish group.

Remember that people are not completely rational about food. Try to be perceptive and sensitive to what your patients like and serve it as often as possible. You should know what food means to the group with whom you are dealing and realize that one cannot prescribe a diet in one easy lesson or introduce a new food or new method of preparation in one meal and expect it to be accepted. People become rather fixed in their habits, and food prejudices and fads are something that one cannot deal with rapidly or by talking against them.

Symbolism in Food

Food symbolizes many things subconsciously to people who are unaware of why they reject certain food, even though it may have been prescribed by a doctor or be "good for them." Milk, for example—the first food for all of us—becomes psychologically connected with security and comfort, but these experiences also occurred during a period in which we were dependent and helpless. Thus milk becomes symbolically a two-edged sword. While milk and its products give us a feeling of security and freedom from anxiety, it has been found that individuals with ulcers and other gastrointestinal difficulties have unconscious conflicts about their feelings of being independently functioning adults. Such a person may like the milk, at the same time rejecting it because of his need to show that he is independent and does not wish to enjoy his dependence.

How else do we use food symbolically? Candy and delicacies are usually reward foods. As children, they were given to us for being good and withheld when we were bad. Many adults unconsciously continue to use them in this way. For instance, when people have really exerted themselves to follow a reducing diet, at some stage they often feel that they are entitled to indulge themselves with some kind of "forbidden" food, such as a sundae. Or, a self-pitying individual may use such reward foods to console himself when he feels sorry for himself or lonely or rejected, thinking to himself, "Pity poor me. Let me have something nice to eat even if I can't have the other nice things I want or feel that I ought to get."

This psychologic mechanism can also be seen in old people who may crave sweets. Such a craving may represent a real need for carbohydrates, but I suspect that more often it is to compensate for other aspects of life which are not sweet or satisfying.

Food can also be symbolic of prestige and status. There is the person who will ask for out-of-season food or food which is not good for him, either to show that he is accustomed to the finer things of life or in some other way deserves unique recognition.

Regression and Food Intake

There is another aspect of the emotional web woven around food. In the really sick person, illness has, of course, a psychologic repercussion. Almost universally, illness results in what we call regression, that is, a reversion or return to a more child-like state of reacting to things. Food habits and attitudes are among the reactions affected. Frequently, the person who cares for the patient becomes a "mother substitute," and this is particularly true in a nursing home or institution where the same people serve the same patient meal after meal, day after day. The mother image is the figure that most people conceive of subconsciously when they become dependent on someone else's thoughtfulness and service. It is not through conscious, intelligent logic that a dependent, sick, regressed patient relates to those who care for him, but rather by the transference of all the older feelings, both dependent and hostile. The patient will often pick the target for his anger and displace it to the person who serves his food, even though she may not deserve it.

The more chronic and more severe the illness, the more childish and infantile the patient's behavior. This regression also is a defense, helping to protect him from a realization that he is no longer able to manage his own situation. The child who knows that he is loved perceives love through the alertness and understanding of the mother who caters to him. This same thing may happen to the aged person who wants to be loved and given to, even though he is no longer capable of returning this love. Therefore, in the psychologic role, the person who serves the food will

be a good mother insofar as she corresponds to the picture of the loving, giving mother who expects nothing in return, and she can materially help her patient to recover insofar as she really fulfills this image of herself.

Need for Individual Attention

Often the person who orders and prepares the food feels that if it is nutritious, that is sufficient; the patient should be satisfied and not complain. She can deny the emotional significance of food by saying, "It is good for you; eat it." Unfortunately, that is what the patient cannot do. The nutritionist can, of course, disregard the individual's attitude and say, "Take it or leave it" and that is just what the patient does—leaves it and an even more serious health problem develops.

Or, you may say you don't have the time to be concerned about the individual's feelings, attitudes, and idiosyncracies about food in planning a general diet. This takes too much time; you do not have sufficient staff; and you are too busy. But what about the time you spend fussing with such people and what about the food that goes into the garbage can instead of into the patients? Success in dietetics does not depend on writing menus, but rather on the ingestions and absorption of this food by the people in your care.

In offering food, you should look beyond the food to the emotional aspects of eating. This does not require extensive training, but rather a feeling for people as people and some awareness of their right to be different and to make demands on you. If you take into consideration your own feelings about food and add to it some of the cultural or sociologic aspects which may be connected with it, you will begin to understand that it is your job to do more than just serve groceries. If you can appreciate your own motives and interest in food and permit other people to have the same feelings, you will be less hostile to or annoyed with their fussiness. You will realize that food likes and dislikes which have lain dormant may be reactivated, particularly in the form of pickiness and finickiness.

In a nursing home where the people are in your charge for extended periods, learning to know each one would be rewarding, because you would have both more satisfied customers and a great satisfaction in knowing that they are responding to your care. We cannot say too often that your attitude of consideration and regard—if not love—should be invested in the food you serve. By serving something attractive and satisfying, you will let the patient know that you consider him as somebody of value and prestige and not just an old person left in your charge by rejecting families.

The Dietary Department of Malben, Israel

LILIAN CORNFELD

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Malben is the organization in Israel of the American Joint Distribution Committee whose purpose is the care of the chronically ill, handicapped, and aged new immigrants. Since its inception in 1949, Malben has established fifty-two institutions in the country, including sheltered workshops for the rehabilitated handicapped. There are two schools for training nurses for service in the Malben tuberculosis hospitals and in the rehabilitation centers for the chronically ill and in the homes for the aged. A course in nutrition, cookery, and diet is also taught at these schools.

Problems

Perhaps Israel presents more problems in food management than any other country. It is still not self-sufficient in foods, and consequently the population receives much of its food in limited quantities as rations. Variety is lacking, and the population that Malben serves is so heterogeneous that, literally, what is one man's meat is another man's poison. Another problem is that Malben residents stay in institutions for years and in some cases even for the rest of their lives. In addition to the definite psychologic and routine physiologic problems of the chronically ill and aging, we are dealing with people who have been totally uprooted and have been brought to Israel within the last few years. In catering for them, we have a staff, mostly untrained, who receive their supervision and training from only one dietitian. There are few dietitians in the country, and the graduates of the government's Nutrition College and Domestic Science School are employed in government institutions and the institutions of the organizations operating the schools.

Food Culture Pattern

The patients and old folk in Malben institutions fall into two categories: Oriental (Middle East) and European. The former eat rice, vegetables, salads, and prefer oily and fried foods. The latter are strictly meat and potato eaters and dislike vegetables. All consume large quantities of bread, preferably white, which crowds out other more valuable foods, nutritionally speaking, and results in a higher caloric value for the diet than is necessary. This is difficult to change because bread is mixed up not only with habit but with inner security as well.

Meat and fish are rare and expensive. The number of carp ponds and chicken runs in the country is

constantly being increased, but only this year are their products free from rationing. Other main sources of animal protein are eggs, milk, cheese, and *leben* made from powdered milk. Imported frozen fish, herring, and meat (always beef) round out the menu. However, the kind and quality of these products lead to great monotony in their method of preparation. There is some cattle raising and deep sea fishing in Israel, but the amounts produced cannot keep pace with the requirements of our ever-expanding immigration. Pasteurized milk has only now been introduced to a limited extent in the towns, due to the efforts of UNICEF. It is now a part of the Consumers' League program to publicize and increase its consumption. Most of the milk consumed, however, except for powdered, is boiled.

Vegetables are plentiful, with two crops a year; thus most varieties are available the year round. Fruits are limited chiefly to citrus and some bananas nine months of the year. Grapes are marketed for four months a year during the summer, but are, on the whole, expensive.

Frozen foods are not featured except for fish, due to the lack of large scale refrigeration and freezers.

In tuberculosis institutions, we serve 3000 to 4000 calories daily. In hospitals and homes for chronic diseases, we give 2800 to 3200 calories daily, and in homes for the aged, we provide 2000 to 2600 calories.

Menu Planning

Menus are planned in advance weekly in every institution according to a master plan. This serves as a guide only and is not compulsory, in order to allow for consideration of the food habits of the various nationalities. A food pattern for Israel is only gradually taking shape.

In our institutions, salad vegetables for breakfast and supper are accepted by all. Local foods, such as eggplant, are presented in a certain dish and when most of the residents show a liking for them, they are continued. If not, other methods of cooking are tried. Milk and cheese are not accepted by the Yemenites, for whom we prepare clabbered milk, boiled and thickened with flour, highly seasoned with garlic and Oriental spices, called *soom*. American gifts of powdered milk, cheese, and butter are used and help to a great extent to make a balanced diet. We have established two "milk days" a week in our institutions which are very popular.

The selective menu is something which we are trying to put into effect to satisfy everybody and reduce plate waste. It must be understood that nationalities are mixed in Malben institutions. Thus, when we serve a dish of cornmeal to Roumanians or rice to Orientals, there should be an alternative dish of potatoes for the Germans. However, limited staff, equipment, facilities, and products do not always allow such consideration.

Much is being done in menu planning to correct faulty European eating patterns which include a lack of animal protein, too much carbohydrates, not enough calcium, and a tendency toward too many sour foods. Overcooking vegetables and preparing salads too far in advance are also faults.

Despite the stated difficulties, Malben institutions are operated most economically and do try to serve the most nutritious foods possible within the budget. In some of the institutions there are vegetable gardens and also chicken runs which supply up to 50 per cent of the meat ration. These activities are largely conducted by the patients and residents. The meat ration for hospitals is 1.2 lb. weekly, but in the homes for the aged is not more than 3 oz. monthly. The small ration of the latter is supplemented by some tinned meat which is not rationed and chicken, so that we reach a figure of 5 oz. weekly. We have no ration of meat for staff except at the tuberculosis hospital.

Cooking Facilities

Stainless steel equipment is gradually replacing more primitive equipment. In the more ideal Malben kitchens there are steam and electric pots. Although the primus and kerosene stoves have been eliminated, in the smaller institutions we cook on gas stoves with individual tanks. There are no grills as yet, but we hope to put them into our newer institutions. To overcome the tendency towards fried foods (Oriental) or too much boiled food (European style), we plan that much of our food should be prepared in electric bake ovens.

Because our food industry is not yet standardized, it is difficult to standardize portions of food according to taste, appearance, and size.

Due to the hot climate, food spoils very quickly, and often the storage and refrigeration space is inadequate. Accordingly, purchases are limited in quantity. All kinds of equipment for transporting meat, live fish, and perishables have had to be constructed.

The staff has constant instruction on food handling, preparation, and cooking, so that there is a minimum of deterioration and spoilage. Happily, there have been very few upsets due to spoiled food.

Personnel

Kitchen work is done with a minimum of hired personnel in the homes for the aged, not only as a matter of economy, but as policy. The residents participate in all the necessary work. It is their home, and they help prepare and serve the food and wash the dishes. Seventy to 80 per cent of the old folk (numbering 5000 between the ages of sixty-five and one hundred) work. We encourage them, no matter how weak and feeble, to get dressed and

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come down to meals. As a result, there is much better consumption and acceptance of food.

Many rehabilitated persons and handicapped who are able to leave Malben institutions are placed in the Malben sheltered workshops where they are served breakfast and lunch at the cost of the raw food.

There are no specially trained diet cooks in the Malben kitchens. The general house-diet serves as a basis and is modified to suit therapeutic diets. All cooking personnel in the kitchens must know how to prepare such basic foods in low-sodium, diabetic, and light diets.

Meeting Our Problems

There are constant meetings with the staffs of the various institutions (doctors, managers, nurses, cooks, storekeepers, and so on) to deal with food problems. Seminars, courses, and lectures are given regularly to nurses, food managers, cooks, and buyers. Food demonstrations and exhibitions are held for dietary personnel. There is a constant in-service training program for the kitchen staff.

Printed material, recipes, master menus, and instructions are sent out regularly by the dietitian to all the institutions.

Cooks, as well as menus, are rotated to get new ideas and to teach and learn from one another.

Talks to patients and residents are given by the dietitian, and nurses teach persons with diabetes to know their diets.

Future Plans

Standardized recipes must be further developed and used in all the institutions. Preparation of a diet manual and a large quantity cook-book suited to our specific needs is in progress to enable our untrained staff to be more accurate.

Although there is an adequate price control check, more attention must be paid to the portion control costs to allow for greater variety in our menus.

There must be more coordination between the various departments and the nutritionist or person filling this post in each institution as well as with the architects who plan the kitchens.

More and more trained personnel are needed in order to expand all the above-named services.

Because the institutions of Malben are spread over so wide a territory in the whole country, it is not always possible for the dietitian to visit an institution more often than once in three months. This is regrettable.

However, the challenge of creation and the great progress which can be seen in the food preparation and service from year to year makes the task of a chief dietitian a most gratifying and satisfying one.

"All-Member" Participation in Memphis

Working together with a common goal is good for the soul and, as we found in the Memphis Dietetic Association, good for the profession, too.

In 1954, we decided to send not one or two but three needy children to the diabetic camp near Chattanooga, and we have continued to do this last year and this. The money was raised in 1954 from the sale of advertising in the program of our state convention.

We also wanted to do something to encourage girls to become dietitians. This was the birth of our scholarship of $300 awarded to a senior in college who is majoring in dietetics or to a dietetic intern.

Another plan to stimulate interest in dietetics has been our Proudfit Essay, which has now been conducted for three years. Because Fairfax Proudfit has meant so much to so many Memphis girls and to the local association in its early days, we throught it appropriate to name our essay contest in her honor. This year the contest was open to both Negro and white girls with equal prizes being offered, although for some reason, we had no Negro contestants.

We have, however, had contacts with Negro girls. This year we conducted a field trip for about thirty Negro high school girls, serving them refreshments at one of the hospitals (three participated). The tour finished at the new Negro teaching hospital, E. H. Crump Memorial Hospital, where a discussion of dietetics as a career was presented. At least one of the girls who participated is going to Nashville this year to start her career as a dietitian.

Other activities of the Memphis group have included help in promoting the new educational television station scheduled to begin telecasting soon. We have been asked to provide a half-hour program once a week and have accepted the invitation.

Another community activity has been our participation in the Public Affairs Council, a group of representatives from all the professional women's organizations in the city. We meet once a month to hear speakers of common interest.

In line with our mayor's policy of more community activity by more people, this year we also became members of the Civic Research Council and assisted with its project of permanent voting registration. A year ago, we joined the Community Council, and at least one of our members always attends its meetings and participates in committee work.—*Marjorie M. Connell, President, Memphis Dietetic Association, Memphis, Tennessee.*

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Book Reviews

Foundations of Nutrition. 5th edition. By Clara Mae Taylor, Ph.D., Grace MacLeod, Ph.D., and Mary Swartz Rose, Ph.D. New York: The Macmillan Company, 1956. Cloth. Pp. 620. Price $6.

This fifth edition of a well known text has again been revised by two of Mrs. Rose's longtime colleagues. They have retained her spirit and general approach to the subject of nutrition with strong emphasis on the historical background of each phase of the subject. They have tried to follow her original aim "to present within a small space some of the fundamental principles of human nutrition in terms to call for no highly specialized training in those natural sciences upon which the science of nutrition rests."

The twelve years which have elapsed between the fourth and fifth editions have seen the accumulation of such extensive new developments in nearly every phase of nutrition that, as the authors say, it has necessitated the rewriting of large portions of the book. Even so, it seems to this reviewer that an undue number of illustrations and references to research findings are drawn from the earlier studies as compared with more recent developments. The proportional space and emphasis given to the various phases of energy metabolism with reviews of early research would appeal more to a student with some experience in research who could appreciate some of the details of methodology and interpretation of findings. Since chemical properties and structure of compounds are systematically omitted for the benefit of non-scientific readers, the significance of including pictures of crystalline amino acids and vitamins is to be questioned.

New developments in protein metabolism and present concepts of protein malnutrition in the world today are vividly portrayed and accompanied by a pertinent compilation of data on protein and caloric consumption and life expectancy in fifteen selected countries. The extent of mineral and vitamin deficiencies is also discussed from the international angle as well as the application of present knowledge to personal health.

Six chapters are devoted to the contributions to the diet made by various types of food materials. Chapter 19 explains in detail the concept of shares and gives a table of the specific value of shares of each nutrient. Many students and teachers find this a more convenient way of visualizing food values than by weight.

The last five chapters help students in applying nutrition principles to the planning of adequate diets for families, pregnant mothers, and children of all ages.

The Appendix is so arranged that the Recommended Dietary Allowances set up by the National Research Council, 1953 revision, are given in Table III, while interpretation of these figures in shares is given in Table I. Table IIIb, a calculation of caloric allowances for different age, sex, and activity categories, is a most convenient device for quick reference.

Two tables of nutritive values of foods are included. Table IV, based on weights, presents up-to-date nutritive values for three quantities of each food: 1 oz., 100 gm., and an averaging serving, with approximate measure of each. Table II interprets these same food values into shares which are defined specifically.

The student or teacher will find in this book a reliable source of the newer knowledge of nutrition with excellent historical background. The many complex interrelations of essential nutrients in metabolic processes and the diverse ways in which foods supplement each other are some of the newer concepts added in this fifth edition. From the thousands of scientific papers published annually, it is no small task to glean the most pertinent facts for presentation in such a text, and the present authors are to be commended for an accomplishment in keeping with the goals of the original author.—*Helen S. Mitchell, Ph.D., Head, School of Home Economics, University of Massachusetts, Amherst.*

Be Slim—Stay Slim. By Thyra Samter Winslow. New York: Harper & Brothers, 1956. Cloth. Pp. 235. Price $2.95.

Stop Dieting! Start Losing! By Ruth West. New York: E. P. Dutton & Company, Inc., 1956. Cloth. Pp. 196. Price $2.95.

Eat-Well Diet Book. By Charlotte Adams. New York: Random House, Inc., 1956. Cloth. Pp. 128. Price $2.95.

The Complete Book of Low Calorie Cooking. By Leonard Louis Levinson. New York: Hawthorn Books, Inc., 1956. Cloth. Pp. 320. Price $4.95.

Reducing cook books, in line with the popular trend toward normal weight, are flooding the market to the point where, for the lay person, there is certainly a plethora. Four of the more recent books in this field include one which appears to carry sound information and advice; a couple, the practicality of which, for the average consumer is certainly questionable; and a fourth which is so specialized as to be of somewhat doubtful use.

In *Be Slim—Stay Slim,* Thyra Samter Winslow has carefully planned and presented the sum of years of experience in writing about food. She has also gathered facts from other books, lectures, pamphlets, and other sources and integrated them into her book with skill. Her chapter on "What's What in Diet" will be especially helpful to the individual, in that it lists foods that are high in protein and groups fruits and vegetables according to caloric value. The author stresses the importance of a well balanced diet, including the use of vitamins and minerals in the diet. A chart by the Department of Agriculture, "Food Values in Common Portions" should prove useful. Not only are the why's and don'ts of a reducing regimen given, but the emotional aspects of reducing, which sometimes play such a big part in eating, are considered. This book is lively, informative, and accurate.

Stop Dieting! Start Losing!, on the other hand, would offer little help to the person on an average income who wants to reduce. The author puts almost all of her emphasis on dietetic pack foods—which are, of course, expensive. She also seems to forget that many working people must eat some of their meals in cafeterias and restaurants. She has spent much time working out the recipes and in making them interesting, but in this reviewer's opinion, few would actually take the time to follow them, for they are fearfully complicated. If one employs a cook, they would be fine, but in an average family, they would be somewhat impractical.

The author of *Eat-Well Diet Book* also seems to ignore the working individual. In addition, the problem of good nutrition apparently did not seem pertinent to her, nor did the advisability of using customary classifications of foods. The menus do not meet good nutritional standards; they are low in protein, far below par in calcium, and there are shortages of vitamins and minerals. In addition, actually misleading information is presented; i.e., meats,

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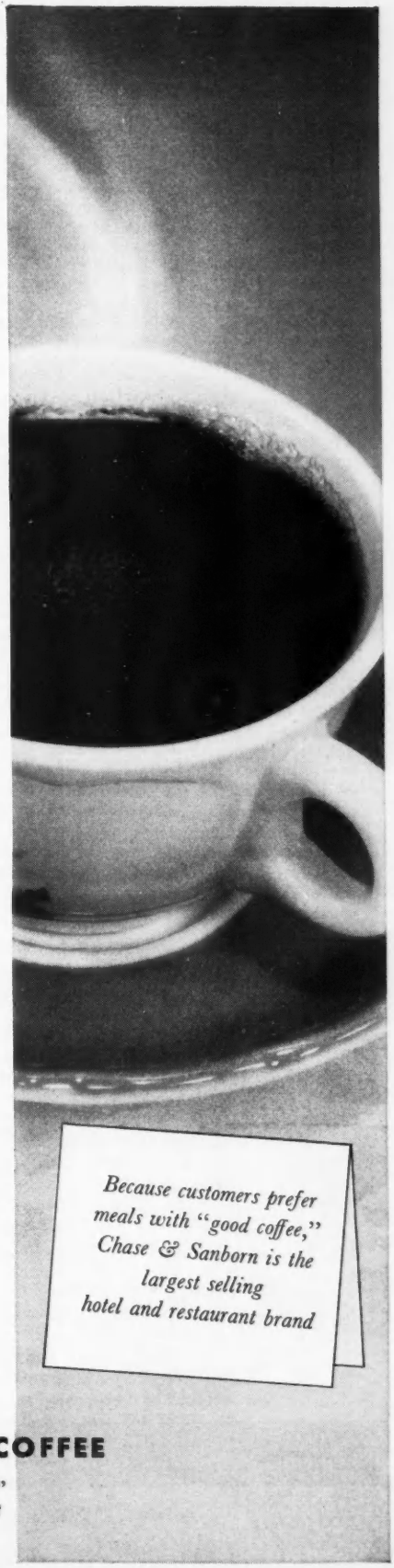

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poultry, and seafood are classified according to carbohydrate content rather than the customary and accepted protein designation.

The fourth book, *The Complete Book of Low Calorie Cooking* would seem to have limited appeal, although it is interesting in that it covers very thoroughly the artificial sweeteners now on the market, comparing them with each other and with sugar. Different types of seasonings to make food interesting are also a feature of the book, and one section deals with "Snacks vs. Sensible Substitutes," which should prove helpful to the person who really is determined to lose weight. Charts on cooking time, oven temperatures, and sizes of cans are included, but their value is questionable, since they are found in ordinary cook books.—*Julia Ann Barney, Baylor University, Dallas,* and *Chairman, A.D.A. Diet Therapy Section Project on "Evaluation of Weight Reduction Projects."*

Gourmet Cookery for a Low-Fat Diet. By Elise Cavanna and James Welton. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1956. Cloth. Pp. 153. Price $3.95.

Ricotta soufflé, fatless of course gumbo, purple slaw with yoghurt, or Cordon Rose blueberry pie (with cornflake crust) could add zest to many a low-fat diet. These dishes are among this book's two hundred imaginative recipes developed by Elise Cavanna, a professional artist, and her husband, James Welton, a professional musician, in their search for attractive "company fare" which would meet the limitations of Mr. Welton's low-fat diet. As a preface to the recipes, Miss Cavanna has suggestions for the use of herbs, wines, and other seasonings; she also contrasts certain high-fat foods with acceptable substitutes, such as finnan haddie for ham; chestnuts for other nuts; and hoop cheese mixed with skim milk for cottage cheese.

The book is written from the viewpoint of the homemaker and chef rather than from that of a dietitian. It is not intended for use as a diet manual. Miss Cavanna, however, overlooks the desirability of being able to estimate or standardize the fat content of a food, and she does not give figures for the fat content of the recipes. In many recipes she lists ingredients to be combined without specific amounts or proportions. Some of the procedures, such as "lightly buttering the skillet" or "blotting grease" from the surface of meat soups with paper towels, might allow considerable variation in fat content according to the cook's technique. One procedure, the use of melted paraffin rather than fat for greasing baking dishes and skillets, is questionable because of the possibility of decreasing the availability of fat-soluble vitamins.

A woman with skill as a cook, an interest in experimenting with food, and the patience to hunt down unusual ingredients will enjoy working with the Weltons' recipes. A less experienced cook may miss having explicit directions for basic cooking techniques and—in some recipes—such facts as the amounts of seasonings or other ingredients, the number of servings yielded by the recipe, and the approximate cooking time. She may also have difficulty with such procedures as flame-broiling at 500°F. and pan-broiling in salt. If the recipes are to be used fairly often or for a strict low-fat diet, the user should have a previous understanding of menu planning, food composition, and cooking procedures for low-fat diets.

In her discussion of the nutritional benefits of a low-fat diet, the author says that "50 to 80 per cent of the population should be on a low-fat diet"; she suggests that the rest of the population could profitably employ low-fat regimens as insurance against overweight and diseases in which dietary fat is a contributing factor. Although the statements supporting her argument are not actually incorrect, they are misleading since they are presented without necessary supplementary information.

For one who plans low-fat menus, however, this book will be valuable as a source of ideas, particularly for "party occasions."—*Caroline Tredwell, Chicago.*

RECENT BOOKS RECEIVED

Potentialities of Women in the Middle Years. Edited by Irma H. Gross. East Lansing: Michigan State University Press, 1956. Cloth. Pp. 198. Price $3.

Italian Cook Book for Quantity Service. By Caleva. New York: Ahrens Publishing Company, Inc., 1956. Cloth. Pp. 448. Price $6.50.

Infant Metabolism. Edited by I. Herbert Scheinberg. New York: The Macmillan Company, 1956. Cloth. Pp. 435. Price $8.

Practical Cookery and the Etiquette and Service of the Table. By Department of Foods and Nutrition, Kansas State College. New York: John Wiley & Sons, Inc., 1956. Cloth. Pp. 364. Price $4.

Prevention, Not Cure, the Answer to the Obesity Problem

Correct body weight is a topic increasingly in the forefront of the public mind. Indeed, it should be, since overweight is a problem of growing importance.

Rapid progress will come neither easily nor quickly. One promising approach is inherent in the concept of weight *control*: An ounce of prevention is worth a pound of cure. It is a general experience that overweight is usually more easily managed in its early stages than when well established Motivation becomes a key factor here; that is, people must become deeply convinced of the necessity for constantly maintaining proper weight. Humans being what they are, one cannot be too optimistic that this will be achieved on a scale sufficient to make much of a dent in the problem. There is some evidence that social pressure (motivation) has influenced body weight in women. There are data which indicate that white women are somewhat lighter today than were their ancestors a half-century ago. On the other hand, colored women, who seem less impressed by the current fashion of slimness, are overweight about three times as frequently as white women (as best this situation can be estimated from height-weight tables). Colored and white men show about the same frequency of overweight, although white men may be somewhat heavier now than in former years. While these comparisons suggest that motivation can influence body weight, they also imply that even very strong motivation is not enough, since one could hardly maintain that overweight has disappeared in women despite the modern urge to be slim.—*Excerpt from Hundley, J. M.: Weight control and health. Food and Nutrition News (The National Live Stock and Meat Board) 27: No. 2, November 1955.*

Disease à la Carte?

Medical men agree that many "virus" illnesses are actually caused by contaminated foods. Stainless steel discourages bacteriogenesis, because its hard non-porous surface does not develop cracks or crevices for food to lodge and decay. Cleanability tests* rate stainless steel above all other materials commonly used for cooking, storage and serving utensils.

"Prize Winning" stainless steel kitchens are meaningless if the heart of the kitchen — the cooking and food storage utensils—are not stainless steel. This "food friendly" metal is a *must* when metal is in contact with food being cooked, served or stored. Stainless steel does not — react with food acids — discolor foods — promote verdigris — affect flavor or aroma. Because stainless steel does not crack, pit or discolor, your kitchen will have no unsightly, germ collecting, blackened utensils—if you specify stainless steel.

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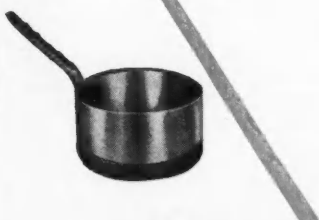
*American Journal of Public Health Vol. 43, No. 2, Feb. 1953



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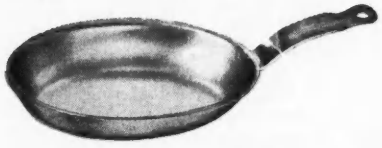

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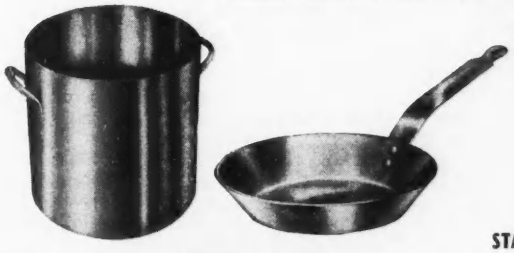

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Letters to the Editor . . .

Food Misinformation

TO THE EDITOR:

The July issue of the JOURNAL must have been written for my benefit. I read it with a great deal of interest, considerable appreciation and respect for the stand the Association has taken on food misinformation, and the way you have presented it.

The reducing diets that are being perpetrated on the American public today are becoming as grave a health hazard as the obesity that they promise to cure so easily—and they present a challenge to dietitians! "What can we do about them?" we ask. Speaking as one from the press, I say "A great deal."

Each member of The American Dietetic Association could take upon herself the individual responsibility of studying these diets, analyzing them carefully and thoughtfully, and then writing a courteous letter to the editor of the publication, or of the department of the publication. She could commend him or her if the diet is good, complain if it is bad and explain why it is bad. I am sure such letters would bear some weight and perhaps in time, safe and sound information will come from popular publications.

In writing such letters, it is important first, to be courteous; second, to have sound information to combat the bad and inaccurate; and third, to sign your full name and address. Unsigned letters always go into the waste basket, but signed letters carry weight. If the writer does not wish to be quoted, that request should be made. Where confidence is requested, it is respected.

There have been several times in my years as Home Economics Editor of the Cleveland *Plain Dealer* when I have argued against carrying advertisements giving false information. In some cases, I have won; in others, I haven't. A few letters from outsiders under those circumstances would have helped.

It is my plea to dietitians to make a concerted effort against the false information that is so rampant today. If anyone does it, it should be the dietitians and members of The American Dietetic Association.—*Helen Robertson, Home Economics Editor,* Cleveland *Plain Dealer, Cleveland.*

EDITORS' NOTE: *Now* it's the "fabulous formula" and the "Revolutionary New Rockefeller Diet," which have appeared recently in popular magazines and in book form. Based on research reported from The Rockefeller Institute for Medical Research, the articles in lay magazines on these diets have precipitated a storm of protests.

For those with professional curiosity, the following items on the "Rockefeller Diet" will provide an interesting story.

In the scientific literature, two reports appeared in 1954: (a) "The Use of Orally-Fed Liquid Formulas in Metabolic Studies" by E. H. Ahrens, Jr., V. P. Dole, and D. H. Blankenhorn—Am. J. Clin. Nutrition 2: 336, 1954; and (b) "Treatment of Obesity with a Low Protein Calorically Unrestricted Diet" by V. P. Dole, I. L. Schwartz, J. H. Thaysen, N. A. Thorn, and L. Silver—Am. J. Clin. Nutrition 2: 381, 1954.

In June and July of this year, in the popular press, the limelight was turned on these reports in two of the large-circulation general magazines: (a) "The Revolutionary New Rockefeller Diet" by Roy deGroot—Look 20: 36 (June 12), 1956; and (b) "Fabulous Formula Diet" by D. C. Norman—Ladies' Home Journal 73: 44 (July), 1954. Mr. deGroot has also published a book: How I Reduced on the New Rockefeller Diet—N. Y.: Horizon Press, 1956.

Subsequently, indignant criticisms from professional workers and medical groups brought forth a belated comment by Dr. Vincent Dole of the team from The Rockefeller Institute for Medical Research, which appeared in the *Journal of the American Medical Association:* "Publicity about 'A Reducing Diet,'" Correspondence — J.A.M.A. 161: 901 (June 30), 1956.

To carry the story further, the editors of *Look* commented in rebuttal to a protest about its original article in "Letters" (July 20, p. 14) that members of the Rockefeller research study had seen proofs of the first article prior to publication and at that time "found nothing factually inaccurate in them."

Even the business and news press have been forced to bow to the furore. *Food Field Reporter* (July 23, p. 36) gave attention to commercial tie-ins which followed the publicity of the "fabulous formula" in the *Ladies' Home Journal,* and *Time* (August 6, p. 32) took notice of the boom in dextrose in the nation's drugstores and the possible medical problems which such a bizarre diet might present. It concluded with sound advice from Dr. Fredrick J. Stare, Harvard School of Public Health, who said "avoid trick diets" and stick to well balanced programs.

And finally, in the August 25 issue of J.A.M.A. (161: 1633, 1636, 1681, 1700), four more statements appear: a special article by Dr. Norman Jolliffe, an editorial, a statement from the Council on Foods and Nutrition, and a second letter from Dr. Dole, all emphasizing the hazards of a low-protein intake and the need for a physician's supervision in a reducing program.

History of A.D.A.

TO THE EDITOR:

As a project in a nutrition seminar class at this college, some of the students are preparing a report on the history of The American Dietetic Association. I would appreciate information on any available literature on this subject.—SISTER JULIA RAYMOND, S.C.N., *Nazareth College, Louisville.*

TO THE EDITOR:

I am a senior institution management major and am compiling a report on the history of The American Dietetic Association. I would appreciate any information you might send me as to the development and organizing of the Association. If possible, I would like to know when The American Dietetic Association held its first meeting.—MARIE HOPKINS, *Womans' College, University of North Carolina, Greensboro.*

EDITORS' NOTE: Our association was founded in November 1917 at a meeting in Cleveland, Ohio, with seventeen charter members.

Since its founding in 1917, the Association has been under the guidance of thirty-two presidents. The roster of distinguished dietitians who have held this office reads:

Lulu G. Graves—1917–20
Mary deGarmo Bryan, Ph.D.—1920–22
Octavia Hall Smillie—1922–24
Ruth Wheeler, Ph.D.—1924–26
Florence H. Smith—1926–28
Anna E. Boller (Beach)—1928–30
S. Margaret Gillam—1930–31
Martha Koehne, Ph.D.—1931–32
Kate Daum, Ph.D.—1932–33
Quindara Oliver Dodge—1933–34
Laura Comstock—1934–35
Katherine Mitchell (Johnson)—1935–36
Lute Troutt—1936–37
Lenna F. Cooper—1937–38
Anna M. Tracy—1938–39
Beula B. Marble—1939–40
Mary I. Barber—1940–41
Nelda Ross (Larsson)—1941–42
Frances MacKinnon—1942–43
Nell Clausen (Smith)—1943–44
Maniza Moore—1944–45
Bessie Brooks West—1945–46
Mable MacLachlan—1946–47
Helen A. Hunscher, Ph.D.—1947–48
Helen E. Walsh—1948–49
Elizabeth Perry—1949–50
Lillian Storms Coover, Ph.D.—1950–51
Margaret A. Ohlson, Ph.D.—1951–52
Beulah Hunzicker—1952–53
Grace Bulman—1953–54
Fern W. Gleiser—1954–55
Winifred Howard Erickson—1955–56

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The entire issue of the JOURNAL for June 1949 was devoted to the history of the Association in celebration of twenty-five years of publication of the JOURNAL. An earlier article, "A New Profession Is Born" by Mary Pascoe Huddleson, published in this JOURNAL in July 1947 will also be a helpful supplement.

Teaching Student Nurses Nutrition

TO THE EDITOR:

I read the article, "Educational Standards for Student Nurses in the Dietary Department" by M. Annie Leitch, R. N. (April issue, page 337) with a great deal of interest. We have included our teaching dietitian in the faculty for several years. She has attended ward classes to serve as a resource person in nutrition and diet therapy problems. She has also felt that she has gained a great deal from this close contact with teaching of student nurses and can see many ways of integrating the materials. —*Elsie M. Anliker, Director, School of Nursing, Henrotin Hospital, Chicago.*

TO THE EDITOR:

I am delighted to see the material on teaching nutrition in the nursing curriculum which appears in the April issue of the JOURNAL. Teaching dietitians need as much help as they can get in this area, and these articles will help to fill some of the gaps.—*Henderika J. Rynbergen, Associate Professor of Science, Cornell University-New York Hospital School of Nursing, New York City.*

The Controversy on Form Diets Continues

TO THE EDITOR:

My attitude toward "standardized" diets is an ambivalent one. I am against form diets because I strongly believe that both good dietetic practice and effective care of the patient implies adjusting any dietary regimen (insofar as consistent with good nutritional practices) to the usual eating and living habits of the individual. Provided there is sufficient emotional stability to follow any prescribed dietary restriction, for most patients, the closer the diet comes to the usual pattern, not only in kinds of food, but in eating habits as well, the more likely it is to be followed. Also, good dietary practice calls for continued contact with the patient and readjustment of the regimen as necessary. Use of a form diet operates against this point of view.

On the other hand, it is true that good form diets may be far better than the tools which some physicians may have available. One would trust that where competent dietitians are available their relationships with staff physicians would be such that the physician would turn to them for their skills rather than to routine printed lists. If such relationships do not exist, it seems to me we need to look to the dietitians and the roles they are serving rather than to the prohibition of inclusion of a *variety* of "standardized" diets in the diet manual of the hospital. Also, insofar as the use of the diet lists by the dietitians themselves is concerned, I am afraid that I feel that the dietitian who would follow this practice probably would not do any better without the lists. In other words, she should better be classified as a technician rather than as a professional dietitian. I think, too, that having a variety of calculated reducing diets, which in turn she could adapt to the individual patient, could be very useful to the busy dietitian. I do not believe, however, that we can by means of "prohibition," as it were, control good or poor dietary practice. Education and constant plugging at high professional standards are the only answers. One of the best places for education is the example set in the dietetic internships.

Incidentally, my experience with obese patients has led me to feel that the dietary aspect of treatment of obesity is only one, and perhaps in many cases, by no means the most important, aspect of the treatment. If diets are given in a manual, I believe they might well be prefaced by a suitably worded comment in this direction. In any case, diet lists should be prefaced by a discussion of the fact that there are many kinds of nutritionally adequate reducing diets, all of which may be good. A short statement on some of the kinds commonly used and examples of each could follow. The statement could also be made that there is still much room for experimentation in this area. The basic considerations are how a patient is using food, determination of the best kind of diet and the best food distribution for him, and finally the coordination of the dietary treatment with all other aspects of treatment.—*Charlotte M. Young, Ph.D., School of Nutrition, Cornell University, Ithaca, New York.*

TO THE EDITOR:

In regard to "Standardized Diets" on page 454 of the May 1956 JOURNAL, I should like to comment that the advantages of including the calculated diabetic diets in diet manuals seem to outweigh the disadvantages. The basic premise of each therapeutic diet is meeting the patient's nutritional needs with food when at all possible. This in itself results in a degree of standardization—in our culture and with our food supply. Another premise is helping a patient to live as normal a life as possible in his home and as a useful member in his community. The excellent basic plan of the six flexible diabetic diets meets both needs.

Even if these diets appear as "form" or "standardized" diets, individualized changes can be made easily. The patient in turn can adapt his dietary plan readily to the family meal plans. The choices in food allow for likes and dislikes as well as nationality preferences. The foods in most instances may be purchased in the grocery store—the same foods the family eats.

The excellent plan of these diets has been a real step forward for the diabetic patient. Much confusion, many questions, and misunderstandings in both the psychologic and physical aspects of living with and controlling diabetes through diet have been eliminated for the patient.

If members of the Committee who developed these diets could see the improved acceptance by diabetic patients in the home, they would agree that diabetic patients, as people instructed in these diets, are indeed fortunate.—*Minna Gutsch, Nutritionist, Wisconsin Board of Health, Green Bay.*

TO THE EDITOR:

I believe there is a valid point in the comments made previously in the JOURNAL concerning standardized diets. However, I wonder if a large part of the problem is not simply a matter of unhappy nomenclature.

It seems to me the Committee was thinking in terms of diet manuals being used only by dietitians, whereas nurses, physicians, and others use them. As we know, many do not know how to calculate diabetic diets or do it by involved methods. I would suggest including a "sample sheet" in diet manuals for this purpose. I believe this would get away from the "standardized diet" idea.—*Alice L. Wood, Bronx, New York.*

Oxalic Acid in Foods

TO THE EDITOR:

Because our library facilities are limited and we are a great distance from a medical training center, we need assistance in revising our low-oxalate diet. The textbook sources which we have seem to conflict and since no bibliography is given, we would like to have the references to original sources. —*Inez A. Jordan, Therapeutic Dietitian, Northwest Texas Hospital, Amarillo.*

EDITORS' NOTE: We would suggest the following references:

Kohman, E. F.: Oxalic acid in foods and its behavior and fate in the diet. J. Nutrition 18: 233, 1939. (Almost one hundred food items are listed.)

Andrews, J. C., and Viser, E. T.: The oxalic acid content of some common foods. Food Res. 16: 306, 1951. (Data are given for 24 vegetables, 2 fruits, 8 tubers, 3 legumes, and 6 miscellaneous foods.)

Interest in History of Nutrition

TO THE EDITOR:

I thought you might be interested in knowing that the Wellcome Historical Medical Library, London, puts out a quarterly bibliography of articles on the history of medicine and allied sciences titled *Current Work in the History of Medicine*. Apparently, they carefully read each issue of the JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION for they regularly list articles of historical interest which the JOURNAL publishes. In the latest issue, they include a listing of the article "Milestones in American Cookery Literature" by Charlotte E. Biester (31: 1214, 1955).—*E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

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Current Literature

Contributed by Elizabeth H. Tuft, Chicago Wesley Memorial Hospital, Chicago; and the Journal staff

ACTA MEDICA ET BIOLOGICA

Vol. 3, July 1955

* A study on the vitamin B_1 metabolism of the patients who received gynecological laparotomy. K. Kosaka.—p. 151.

Thiamine Metabolism of Patients after Gynecological Laparotomy. The general opinion of many researchers is that 0.5 to 2 mg. thiamine daily intake is sufficient for normal life. In these patients, thiamine content following gynecological laparotomy decreased daily. With a daily injection of 3 mg. thiamine, however, a sufficient amount of thiamine is contained in blood and in urine. Daily injections of 5 mg. promoted a higher value of thiamine in blood. An amount nearly equal to that injected was discharged in urine. Pyruvic acid in blood increased but injection of thiamine may suppress this increase.

THE AMERICAN JOURNAL OF MEDICINE

Vol. 20, May, 1956

Pathways of iodine metabolism. S. A. Berson.—p. 653.

THE AMERICAN JOURNAL OF NURSING

Vol. 56, July, 1956

* Protein deficiency. G. A. Goldsmith and W. G. Unglaub.—p. 856.

Protein Deficiency. In this article it is pointed out that protein deficiency due to inadequate dietary intake can occur alone or in combination with a deficiency of calories. Signs of deficiency during growth differ from those observed in adult life. In treating kwashiorkor, skim milk powder is excellent, but since it is scarce and expensive in many areas, a search is being made for combinations of vegetable protein as a therapy. Diagnosis of protein deficiency in adults is not easy, particularly in mild cases which are secondary to other diseases. Dietary history is most useful. Continuous weight loss is an important physical finding. The most satisfactory treatment is a diet rich in good protein. In some cases, protein concentrates may be added to the diet.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 46, July, 1956

* Sanitary significance of microorganisms in frozen citrus products. R. H. Vaughn and D. I. Murdock.—p. 886.

Frozen Citrus Products. Coliform bacteria are found on sound citrus fruit, and even in the end product, even though citrus concentrates are produced under high sanitary standards, and in an essentially closed system where there is a certainty of no human contact with the product. This is basis for presumption that there could be no coliform contamination during processing. Therefore, it would appear that the coliform bacteria are of no public health significance in evaluating the sanitary quality of frozen citrus concentrates. It is concluded that microorganisms capable of growing in single strength, or partially concentrated orange juice, are the most important and logical indexes of sanitation in the production of high quality frozen citrus products.

ANNALS OF INTERNAL MEDICINE

Vol. 44, May, 1956

* The clinical significance of hyperglobulinemia. I. Diagnostic implications. A. R. Feinstein and R. G. Petersdorf.—p. 899.

The clinical significance of hyperglobulinemia. II. Correlation with liver function tests, serologic tests for syphilis, and bone marrow examinations. A. R. Feinstein and R. G. Petersdorf.—p. 925.

Clinical Significance of Hyperglobulinemia. Hospital records of 394 patients with hyperglobulinemia showed that 268 had diseases generally associated with an elevated serum globulin, i.e., multiple myeloma, sarcoidosis, collagen disease, liver disease, cancer, chronic pulmonary disease, and certain infections. In patients whose serum globulin was 5.0 gm. or higher per 100 ml., over 90 per cent had specific "hyperglobulinemic" diseases. Only about 20 per cent of those with hyperglobulinemia also exhibited hyperproteinemia.

Role of Ammonia in Clinical Syndromes. This comprehensive discussion emphasizes the clinical significance of the fact that there are many reactions by which ammonia is produced in the organism and few ways to dispose of it. The marked effect of ammonia on brain metabolism *in vivo*, together with the ubiquitous production of this toxic agent, makes a plausible case for ammonia as a causative or contributing factor in many comatose states associated with peripheral disease.

ANNALES MEDICINAE EXPERIMENTALIS ET BIOLOGIAE FENNIAE

Vol. 33, Supplementum 11, 1955

* Studies on toxoplasma and the serology of toxoplasmosis. P. Gronroos.

Toxoplasmosis. The microbe toxoplasma and the problems associated with the serologic tests for toxoplasmosis are discussed. It was found impossible to classify the organism. Serologic tests are non-specific and it is, therefore, impossible to supply definite information on the distribution of toxoplasmic infection at the present time. It was found that the incidence of infection has been overestimated. The toxoplasma seems to possess every possibility of being a microorganism extremely commensal with man. The risk of infection in different age groups is approximately equal; the same applies to the different social groups and to urban and rural dwellers.

THE BRITISH JOURNAL OF NUTRITION

Vol. 10, No. 2, 1956

* An investigation of the rarity of infantile scurvy among the South African Bantu. M. Andersson, A. R. P. Walker, and H. C. Falcke.—p. 101.
* The effect of vegetarianism and antibiotics upon proteins and vitamin B_{12} in the blood. G. A. Dhopeshwarkar, J. C. Trivedi, B. S. Kulkarni, R. S. Satoskar, and R. A. Lewis.—p. 105.
* The effect on digestibility of methods commonly used to increase the tenderness of lean meat. J. H. Farrell.—p. 111.
* Relation between protein efficiency and net protein utilization. A. E. Bender.—p. 135.

Microbiological evaluation of protein quality with *Tetrahymena pyriformis W.* 1. Characteristics of growth of the organism and determination of relative nutritive values of intact proteins. W. R. Fernell and G. D. Rosen.—p. 143.

Microbiological evaluation of protein quality with *Tetrahymena pyriformis W.* 2. Relative nutritive values of proteins in foodstuffs. G. D. Rosen and W. R. Fernell.—p. 156.

Scurvy among the Bantu. The amount of ascorbic acid from milk from breast feeding, when practiced for protracted periods as in rural areas in Africa, and from irregular amounts of fruit and vegetables, was found sufficient to protect against scurvy. Investigations were made on infants under two years old suffering from severe malnutrition, and infants seen in the outpatients' department. Included were clinical and radiologic observations, determinations of plasma ascorbic acid, and studies of the popular baby foods prepared by Bantu mothers. Plasma ascorbic acid concentration was consistent with the absence of scurvy, although the foods contained very little of the vitamin.

Blood Proteins and Vitamin B_{12} in Vegetarians. Plasma protein and blood vitamin B_{12} were determined in five Indian medical students on a vegetarian diet, which included milk and milk products, but no other food of animal origin, and in five non-vegetarian students whose diet included eggs, fish, fowl, or meat daily. The vegetarians were given 50 mg. Aureomycin daily for two months, and determinations were repeated after one or two months. The

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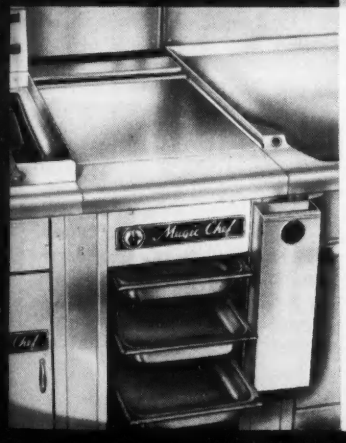

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albumin content of the plasma was below normal and the globulin content above normal in the vegetarians, who also had a lower blood content of vitamin B_{12}. The administration of Aureomycin to the vegetarians produced a rise in plasma albumin and a fall in all the globulin fractions. Values for blood vitamin B_{12} increased significantly.

Digestibility of Lean Meat. Some foods often leave large undigested residues if they are not masticated. The most nutritionally important are the lean meats, some of which leave undigested residues of up to 85 per cent of their original weight. Methods to reduce the losses by increasing the digestibility of meat were studied, including: soaking meat for 12 hr. in diluted vinegar, using a tenderizer, beating it with a rolling pin, beating with a spiked hammer, and treating it with a tenderizer plus beating with a spiked hammer. Beating with the hammer, using the tenderizer, and the use of both methods together increased digestibility from 16 to 37 per cent. The other two methods had no significant effect.

Measurement of Protein Utilization. Thirty-two proteins and five amino-acid mixtures were examined, using rats, both for protein efficiency ratio (P.E.R.) and for net protein utilization (N.P.U.) and results compared. Food consumption correlated closely with both P.E.R. and P.N.U. in the studies with the thirty-two proteins, but the relation did not hold for diets containing synthetic amino acids as the sole source of nitrogen. It is suggested that palatability may have more influence than N.P.U. on food intake. The average P.E.R. correlated well with the N.P.U., despite drawbacks of the study which are discussed. The results indicate that if P.E.R. is measured in a single ten-day experiment, the results might be invalidated because of inadequate food intake and there would be no indication that the result was not acceptable. It is shown that N.P.U.'s can be correlated with negative P.E.R.'s (loss of weight in grams per gram protein eaten).

DIABETES

Vol. 5, May-June, 1956

* Metabolism of C^{14}-labeled glucose in diabetes. N. Baker.—p. 178.

Endocrine relationships in carbohydrate metabolism. M. E. Krahl.—p. 203

* The relation of insulin to liver metabolism. R. Levine and I. B. Fritz.—p. 209.

Metabolism of C^{14}-Labeled Glucose in Diabetes. Present literature on the problem of glucose utilization in the person with diabetes is discussed. With few exceptions, experiments involving the use of tracers have simply not been designed to test the question of whether glucose utilization, which seems to be depressed at any given blood sugar concentration in tissues of the diabetic person, may proceed at an adequate rate in the presence of a high concentration of glucose. Considerably more experimental work will be needed before the actual and relative rates of glucose utilization in tissues of the intact diabetic are established.

Relation of Insulin to Liver Metabolism. The derangements in hepatic fat, carbohydrate, and protein metabolism found in experimental and clinical diabetes are briefly described. The addition of insulin *in vitro* to isolated perfused livers, to liver slices, to homogenates, and to particle-free extracts from diabetic animals has rarely and inconsistently resulted in any correction of these metabolic impairments. From the data which are summarized, it has been tentatively concluded that the action of insulin on hepatic metabolism is mediated indirectly, possibly via direct or indirect interrelations, with the pituitary; and/or through an effect on the release of a hypothetical substance from a peripheral tissue directly responsive to insulin.

FOOD RESEARCH

Vol. 21, May-June, 1956

* Some aspects of numerical scoring in subjective evaluation of foods. A. F. Carlin, O. Kempthorne, and J. Gordon.—p. 273.

* Determination of the thermal death rate of bacteria. S. Levine.—p. 295.

* The effect of two methods of cooking on palatability scores, shear force values, and collagen content of two cuts of beef. S. Cover and W. H. Smith, Jr.,—p. 312.

* Meat tenderization. II. Factors affecting the tenderization of beef by papain. A. L. Tappel, D. S. Miyada, C. Sterling, and V. P. Maier.—p. 375.

Numerical Scoring in Evaluation of Foods. The effectiveness of different scales of numerical scoring in subjective evaluation of foods was investigated. To obtain extremes, scales of 0 to 5, 0 to 10, 0 to 100 were used on reconstituted orange juice with three levels of added sugar. The mean score of a group of judges was related linearly between scales so that the population of judges could be assumed to be measuring the same attribute or combination of attributes on the different scales. Scales were compared according to coefficient of variation, standard deviation within judges, and sensitivity. It was concluded that the 0 to 100 scale is at least as good as the 0 to 5 scale and in some cases better. The 0 to 10 scale and the 0 to 100 scales were not compared with the same group of judges. The 0 to 10 scale was better than the 0 to 5 scale.

Thermal Death Rate of Bacteria. This study is concerned with determining the condition required to sterilize a system thermally. The difficulties which arise in those systems which undergo deterioration on being subjected to temperatures high enough to destroy the more resistant spores are also considered. The analysis resulting from the discussion is applied to the thermal inactivation of P.A. 3679 and *Clostridium botulinum*. Certain essential differences in the energetics of the thermal inactivation processes in the two instances are emphasized. A general method is developed for determining the conditions for thermal sterilization of samples by means of thermal sterilization functions.

Cooking Methods and Beef Cuts. Well done steaks from loin and bottom round were more juicy broiled than braised. Those from the *biceps femoris* muscle in bottom round were more tender braised than broiled. Steaks from *longissimus dorsi* in loin were little if any different in tenderness when cooked by the two methods. The results with moist and dry heat methods of cooking indicate that collagen nitrogen content was associated with tenderness when the same muscle, *biceps femoris*, was cooked by different methods, but when the tenderness of the two muscles was compared by the same method, the collagen content was not associated with tenderness.

Meat Tenderization by Papain. This study was to define by appropriate physical, chemical, and histologic methods the effect of time of papain application prior to cooking and the effect of temperature on protein hydrolysis by papain. The precooking holding periods with papain on the meat were found to be unnecessary. The histologic study of beef cooked with papain showed that papain does not affect sarcolemma, nuclei, or muscle fibers at distances greater than 0.5 mm. Papain hydrolyzes the sarcolemma and the muscle cell nuclei before there is any apparent digestion of the muscle fibers themselves. As measured by the transformation of soluble protein to amino acids, papain hydrolysis reaches a maximum at temperatures of 60° to 80°C. It is probable that the heat-labile muscle proteins denature before the relatively heat-stable papain and then papain hydrolyzes these denatured proteins with maximum effect.

FOOD TECHNOLOGY

Vol. 10, July, 1956

* The peeling of apples with infra-red radiation. E. A. Asselbergs and W. D. Powries.—p. 297.

* Incorporation and distribution of monosoduium glutamate in chicken meat. C. J. Rogers, P. A. Mills, and G. F. Stewart.—p. 299.

* The effect of antioxidants on frozen ground pork. J. Neill and L. Page.—p. 315.

Peeling Apples with Infra-Red Radiation. Procedures to peel apples with flame and electric furnace have resulted in charring and subsequent losses. It was found that blistering of the apple occurred within 40 to 45 seconds when exposed in a muffle oven at 850°F. Cooling and removal of the peel resulted in a weight loss of only 3 or 4 per cent. During exposure of the apple to the high temperature, some steam was formed in the intercellular spaces immediately below the histologic peel. With a heat source of about 1520°F., exposure times of 9 to 30 seconds were required depending on the variety.

Monosodium Glutamate in Chicken Meat. Distribution of monosodium glutamate in chicken meat by liquid injection, a dip procedure, and a dusting were considered. The "Hypospray" unit injected graded amounts of up

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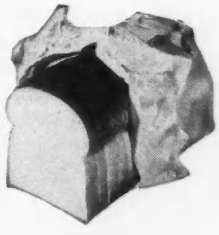

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1½ pounds Black Raspberry Jell-O
2¼ quarts hot water (140°-160° F.)
2½ quarts frozen raspberries, thawed
6 baked 9-inch pie shells, cooled
3 cups heavy cream

1. Dissolve Jell-O in hot water. Sweeten berries, if desired. Add to Jell-O. Chill.

2. When slightly thickened, pour 2 cups of mixture into each shell. Chill.

3. Whip cream. Fold in rest of Jell-O. Pour over firm Jell-O; chill until firm. *Yield:* Makes 6 quarts filling.

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to 1 ml. which penetrated the skin through a very small hole. In the dip procedure, fryer carcasses were cut up and dipped for varying lengths of time. For the dusting method, weighed quantities of finely powdered monosodium glutamate were sprinkled evenly over specific areas inside the cavity of freshly drawn birds. Satisfactory results were obtained from all three methods.

Antioxidants in Ground Pork. Studies were made on cooked and raw groups of ground pork containing monosodium glutamate (MSG), full-fat soybean flour, butylated hydroxyanisole (BHA), and on a control group. There was little difference in either the raw or the cooked soy-treated pork before storing. MSG-treated samples received the highest ratings on palatability. Chemical determinations indicated more pro-oxidant than antioxidant activity on the part of MSG, the peroxide values increasing rapidly after the twelfth month of storage. BHA had a significant antioxidant effect on pork stored raw. In pork cooked prior to freezing, it was the most effective of the treatments in retarding oxidation. In acceptability, it was either equal to or better than the control.

JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

Vol. 4, June, 1956

* Nutrition in preventive geriatrics. W. C. Martin.—p. 609.

Nutrition in Preventive Geriatrics. Although the prevention of degenerative changes in the body may very well be achieved through sound nutritional principles, little or no attention is paid to the quality of foods. The protein and carbohydrate content of foods is largely determined by the fertility of the soil. Two-thirds of the top soil in this country has been shown by analysis to be deficient in minerals and organic matter. On top of that, the vitamins and minerals necessary for assimilation and utilization by the body may be depleted by the refinement of foods. The U. S. Public Health Service reported in 1954 that analysis of twenty-five meals selected at random from restaurants and institutions revealed DDT in all of them. It was found even in meat, fried and mashed potatoes, pie, and coffee with cream. Long-range studies are necessary to determine the effect of various chemicals which are added to foods to improve their appearance. This is also the case for antibiotics and stilbestrol fed to animals raised for food. Fluoridation is another controversial subject related to nutrition, which may influence the development of degenerative diseases.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 161, June 23, 1956

* Current trends in the feeding of infants and children. C. A. Smith.—p. 728.
* "Hundred year old eggs." Queries and Minor Notes.—p. 769.

Vol. 161, June 30, 1956

* Vitamin nutrition, infections, and antibiotics. G. A. Goldsmith.—p. 882.
* Amino acid imbalance and supplementation. Editorials.—p. 884.
* Form of iron absorbed by man. Queries and Minor Notes.—p. 928.
* Enteritis in uranium camps. Queries and Minor Notes.—p. 931.
* Animal fat and cholesterol. Queries and Minor Notes.—p. 933.

Vol. 161, July 7, 1956

* Cheilosis, glossitis, and vitamin B deficiency. Queries and Minor Notes.—p. 1031.
* Traces of lead in foods. Queries and Minor Notes.—p. 1033.
* Beriberi. Queries and Minor Notes.—p. 1034.

Vol. 161, July 14, 1956

* Diet for overweight man. Queries and Minor Notes.—p. 1115.
* Unsaturated fats in coronary disease. Queries and Minor Notes.—p. 1118.

Trends in Feeding of Infants and Children. The knowledge of nutrition has been very successfully applied to the care of infants and children. Deficiency diseases now are more likely to appear because established dietary habits of local groups are temporarily disturbed than because any large section of the populace is living at a marginal level. An illustration is the increasing incidence of scurvy in a southern region where the old custom of giving "pot liquor" (a good source of ascorbic acid) to babies is being abandoned, but where the new custom of feeding fruit and vegetable juices has not been adopted. Teaching and research are concentrated on child behavior, infectious disease immunity, and problems other than the nutritional aspects of child health. The most striking trend may well be the apparent and potentially hazardous withdrawal of medical activity from positions consolidated by the successes of the past decades. In feeding children, it is not the problem of persuading them to eat, but to keep some of the adolescents from eating too much. Another trend is the increased use of foods specially processed for children.

Are "Hundred Year Old Eggs" Harmful? Recently it was found that the Chinese delicacy, "hundred year old eggs," may be simulated by immersing fresh eggs in shells in a 3 per cent solution of sodium hydroxide for four to six weeks. One consultant pointed out that proper attention should be given to dangers which may arise from accidental poisoning from lye, if sodium hydroxide is used. It was also noted that the treatment is, in effect, a step toward digestion of the egg, but that the formation of sodium sulphide, a nonvolatile toxic material, makes it undesirable. Since sulphides are rapidly oxidized in the body and have no cumulative effects, it seems likely that the occasional ingestion of one of the alkali-treated eggs would not be very harmful.

Vitamin Nutrition, Infections, and Antibiotics. Presently it is impossible to decide whether any of the vitamins should be administered in conjunction with any of the antibiotics. It should not be anticipated that such studies will uncover a magic formula to solve the nutritional problems of the

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individual patient. The physican will have to continue to evaluate carefully all aspects of the patient's nutritional state and prescribe accordingly. The exact requirements of particular vitamins in specific infections remain to be determined. In animal experiments, vitamin deficiency has been found to increase, decrease, or fail to influence resistance to infection.

Amino Acid Imbalance and Supplementation. In a discussion of the effects of amino acid imbalances due to additions of one or more specific amino acids, it was shown that supplementation of a low-protein diet containing choline with as little as 0.1 per cent of DL-methionine precipitated a threonine deficiency resulting in an increased deposition of liver fat. The addition of protein of unbalanced composition to diets low in tryptophan increased the tryptophan requirement and depressed growth. Addition of lysine to a diet containing 8 per cent egg albumin and supplemented with valine and threonine caused a growth depression that was corrected only by the addition of histidine. Imbalances also seem to modify vitamin requirements. Because of the dangers of imbalances, it is suggested that supplementation of that type should not be recommended until there is indisputable evidence of the value as well as the safety.

Form of Iron Absorbed by Man. The ideal situation regarding oral administration of iron is to give a ferrous iron compound to an individual with ample gastric juice of high acidity. The ferrous oxalate would be theoretically preferable to iron ammonium citrate or reduced iron; however, little is known of the medicinal use of ferrous oxalate which is used in North America only as a photographic developer of silver-bromide-gelatin plates. That ferrous oxalate is popular for treatment of anemia in South America is surprising in view of the potential toxicity of all oxalates. Ferric iron is assimilable by man, but must be converted first in the intestinal tract to the ferrous form in which it is taken up. The conversion is favored by the acidity of the stomach, which at the same time retards the formation of non-dissociable complexes with nucleic and amino acids and phosphorus compounds.

Enteritis in Uranium Camps. In taking care of an enteritis epidemic, patients might well be re-examined for scurvy, with emphasis on dental and skin states. If scurvy is ruled out, exploration to the cause should be directed to culinary sanitation and the hygiene of food poisoning by the toxin of ordinary micrococcic contamination.

Animal Fat and Cholesterol. It was questioned whether the incidence of hardening of the arteries is lower in Eskimos who eat raw meat than with us who eat cooked meat. The fat and cholesterol content of the Eskimo's diet is about the same as that for the U. S. population. There is no evidence that arteriosclerosis is either more or less frequent in Eskimos than in white people. There is no evidence that cooking makes any changes in animal fat or

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cholesterol that would render damage to the arteries. There is good evidence that ingestion of diet high in animal food and animal fat leads to higher blood cholesterol levels, on the average, than a diet where vegetable food sources replace part of the animal food.

Cheilosis, Glossitis, and Vitamin B Deficiency. Chronic iron deficiency may give rise to cheilosis and glossitis. Localized glossitis may be from sharp irregularities on teeth. Oral lesions may be allergic in origin, with the agent being something like lipstick, certain dental plastics, or tobacco. It is hard to recognize when it is the result of modified utilization of vitamins in cellular metabolism. When it is recognized, there is usually diminished absorption of various components of the B-complex from the gastrointestinal tract.

Lead in Foods. Nearly all foods contain traces of lead, so some daily intake is expectable and is without known detriment. Condiments, such as some curry powders and beverage materials (some teas), stand out as having lead content. It is not known that trace quantities of lead serve any useful purpose in metabolism, but they are not known to be injurious.

Beriberi. Thiamine is most effective in acute beriberi. It should be supplemented by the whole B-complex. Rice polishings and other sources of natural B-complex, such as wheat germ, deteriorate more slowly if kept at refrigerator temperature. Chronic beriberi is associated with structural change, some of which is apparently irreparable, as in the case of advanced beriberi heart disease. On the basis of present knowledge, there is no reason to assume that the prolonged ingestion of moderate amounts of rice polishings would have any harmful effects on the gastrointestinal tract.

Diet for Overweight Man. A man should diet only when, from the statistical standpoint, the degree of overweight approaches 20 per cent above average. The daily caloric requirement for maintenance can be calculated if body size, age, and physical activity are known. The diet should include 1 gm. protein for each kilogram of body weight and should fulfill the recommendations for dietary minerals and vitamins. Although the relationship of levels of cholesterol and lipoproteins in the blood to atherosclerosis remains highly speculative, decreasing the fat intake has been shown to decrease the concentration of certain blood lipids.

Unsaturated Fats in Coronary Disease. A good diet is well balanced in essential nutrients, including amino acids, vitamins, and minerals. The present-day American diet is often excessive in calories, fats, and "empty" calories. The need is to correct the tendency toward a rich, unbalanced diet. This could be accomplished by increased intake of fresh and cooked fruits, vegetables, whole grain products, and lean meats, coupled with decreased ingestion of fats in such forms as gravies, sauces, fried foods, and desserts. It would reduce the fat intake from its present high of 40 to 60 per cent of all calories to a reasonable 25 to 30 per cent. This would contribute significantly to reducing the high incidence of clinical coronary atherosclerosis of middle-aged Americans.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Vol. 26, June 1, 1956

* Fatal fat embolism following criminal violence. K. C. Jacob.—p. 424.

Fatal Fat Embolism. A definite place is given in literature on trauma to fat embolism complicating injury, especially fractures of the long bones. This report is of a fatal case where the fat originated from subcutaneous fat embolism due to violence. The incidence of fat embolism varies. Out of 164 cases, evidence of severe degrees of fat embolism was found in eleven, three proving to be fatal. The condition may be caused by: injury to adipose tissue which forces liquid fat into the blood vessels, unknowingly injecting oil into the circulation when oil is introduced into the uterine cavity as an abortifacient, and by natural disease process without trauma as seen very rarely in sickle cell anemia. The normal blood fat varies from 6 to 7 per cent. The fat present in embolism is evidently still fluid and when autopsy is done while the body is still warm, the fat is found in a fluid state.

NUTRITION ABSTRACTS AND REVIEWS

Vol. 26, April, 1956

* The distribution of vitamins within the tissues of common foodstuffs. W. I. M. Holman.—p. 277.

Vitamins in Common Foods. This review refers primarily to fresh foods. It is based on literature covering the period from 1938 to the middle of 1954. In cereals, thiamine is concentrated in the scutellum and in the aleurone layer. The germ and aleurone layer have the highest concentrations of riboflavin in wheat and rice kernels. Niacin in wheat, maize, and rice is chiefly in the aleurone. Vitamin E is in the germ of wheat, maize, and oats. Many fruits, such as apples, pears, citrus fruits, papayas, peaches, and tomatoes, have high ascorbic acid concentrations in the outer skin. Riboflavin in apples, pears, and tomatoes is higher in the core than in the flesh. Many leafy vegetables have concentrations of ascorbic acid in the green, outer leaves. In animal tissues, livers and kidneys are rich in vitamins, and the livers of ox, sheep, and pig which are also high in vitamin A. Beef heart and kidney are high in thiamine. Rabbit liver is rich in vitamin A, which is also present in chicken and turkey livers. In the hen's egg, vitamin A, thiamine, and vitamin D are mainly in the yolk. The B vitamins are in both the yolk and white, with concentration being in the yolk. The review also gives practical applications of the findings.

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NUTRITION REVIEWS

Vol. 14, July, 1956

* Arteriosclerosis and nutrition. W. S. Hartroft.—p. 193.

Arteriosclerosis and Nutrition. This article indicates that one of the most promising approaches to the problem of arteriosclerosis is through the study of the interrelationships between dietary fat (both quantity and source), cholesterol, lipotropic factors, and renal function. Currently reported investigations emphasize that the total amount and nature of the dietary fat may be factors of equal or greater importance in the production of the disease than either cholesterol or lipotropes. Reports from work at Washington University School of Medicine note that dietary fat may profoundly alter the nature and severity of vascular lesions, even those initiated by abnormal conditions not of dietary origin.

PUBLIC HEALTH REPORTS

Vol. 71, June, 1956

* Food sanitation. G. G. Slocum.—p. 560.
* FDA nutrition program. E. M. Nelson.—p. 566.
* New problems of food safety. F. A. Vorhes and A. J. Lehman.—p. 571.
* Control of pesticides on food. W. B. Rankin.—p. 577.
* Certification of coal-tar colors. G. R. Clark.—p. 581.

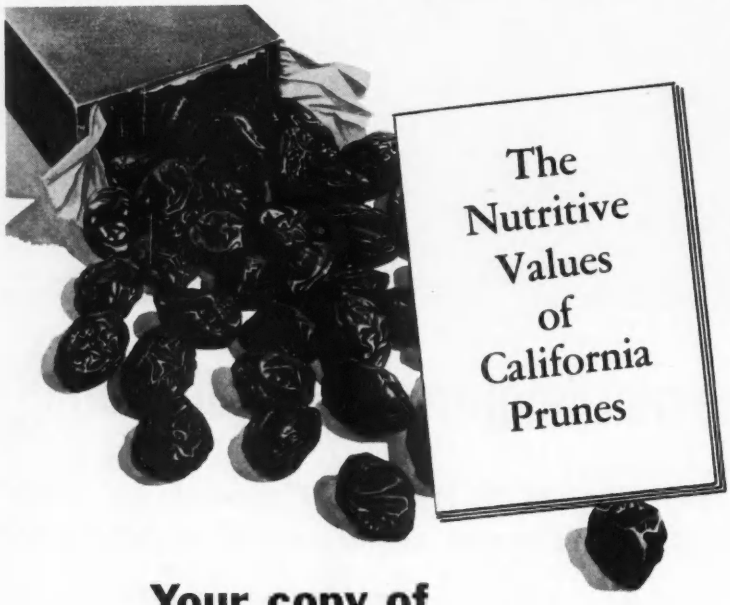
Food Sanitation. This article gives a history of the early activities in the field. Until 1927, when the Food and Drug Administration was formed, the enforcement was through the Bureau of Chemistry of the Department of Agriculture. The Act of 1906 described adulterated food as: "if it consists, in whole or in part, of a filthy, decomposed, or putrid animal or vegetable substance. . ." In 1938, the Food, Drug, and Cosmetic Act made many corrections and described adulterated food as: "if it consists in whole or in part of any filthy, putrid, or decomposed substance, or if it is otherwise unfit for food; or if it has been prepared, packed, or held under insanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health. . ." Enforcement procedures and voluntary correction methods and applications are discussed, along with plans for the future.

FDA Nutrition Program. The Division of Nutrition of the Food and Drug Administration is responsible for the development of scientific facts and opinions concerning nutrition as a basis for the policies and regulatory activities of the FDA. It examines official samples for vitamin or other nutritional properties, by means of biologic, microbiologic, or chemical procedures which cannot be performed in the field laboratories. Work is divided equally between strictly enforcement operations and specialized research.

New Problems of Food Safety. Chemical additives, whether they be intentionally put into food or are the incidental result of food production or processing, are today a major cause for concern with respect to safety of food. In this article, the elements of needed knowledge contributing to food safety are discussed. The use of antibiotics as food production adjuvants in such ways that they actually are consumed is discussed, since it is manifestly contrary to the public interest and has been so declared by the FDA.

Control of Pesticides on Food. The pesticide chemicals amendment of the Food, Drug and Cosmetic Act states that a raw agricultural commodity shall not be marketed if it bears a residue of a pesticide chemical unless the chemical is generally recognized by experts as safe, if the government has established a safe tolerance for the chemical, or if the government has exempted the pesticide chemical from the requirement of a tolerance. Inspections are made before the growing season and spray schedules are issued by the state agricultural authorities. During the growing season, inspectors go openly into the areas. Other enforcement and prevention methods are also discussed.

Certification of Coal-Tar Colors. Coal-tar colors come under the color certification program of the FDA. Colors which are harmless and suitable for use are listed. Investigations are conducted to certify batches of the coal-tar colors. Enforcement activi-



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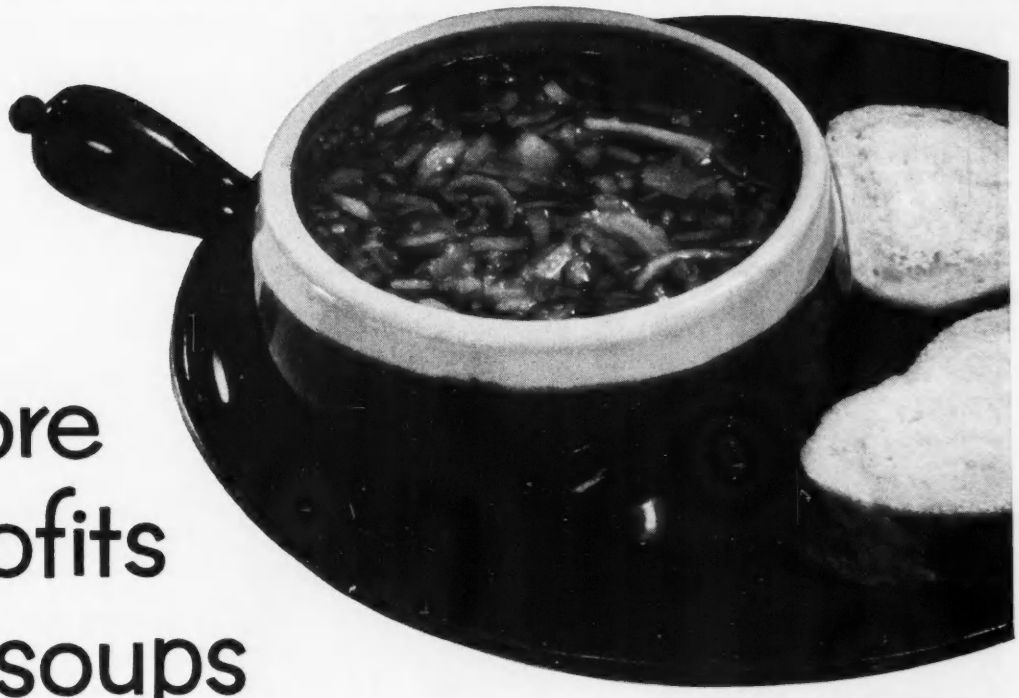

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AMERICAN RESTAURANT MAGAZINE

Vol. 40, July, 1956

* Riper values in knowing how to buy fresh fruit. R. A. Seelig.—p. 92.

Buying Fresh Fruit. Keep the following points in mind in purchasing fruit. (1) Is the item in season? In general, the quality is best and the price lowest when a fresh fruit is in good supply. (2) Is the supply normal for the season, or is it unusually low or high? (3) How is the quality? Inspect every lot when it is received. (4) Learn grade standards and order a suitable grade. (5) Distinguish between "grade" and "condition"—to be in good condition, fruit should be fresh; reasonably free from bruises, cuts, and punctures; not overripe; and free from molds and rots. (6) Check on maturity. Some fruits never ripen properly if picked immature while others should be picked unripe. (7) Pay attention to brand labels, because fruits packed under some brands are consistently good. Consult your supplier on this. (8) Area in which fruit is grown is of considerable importance, and fruit buyers should keep the regional differences in mind. (9) Price is important, but if you want good service from a supplier, you must be a profitable customer—not one who constantly shops around. (10) In general, be suspicious of produce offered at "bargain" prices. (11) Check on containers. There are many sizes and shapes which convey no meaning as to cubical content or net weight. Watch for loose packs, short packs, and packs that are of one quality at the top and another at the bottom. If possible, weigh everything. (12) Check on size of fruit. Often the larger sizes are more expensive than the medium or small sizes, and the smaller fruit may suit your particular purpose. (13) The good restaurant buyer will be "from Missouri" and have to be shown, unless he is dealing with a supplier in whom he has full confidence. The author lists detailed pointers on buying all types of fruit, from apples to watermelon. Included also is a "Quick Guide to Monthly Fruit Supply."

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COLLEGE AND UNIVERSITY BUSINESS

Vol. 21, July, 1956

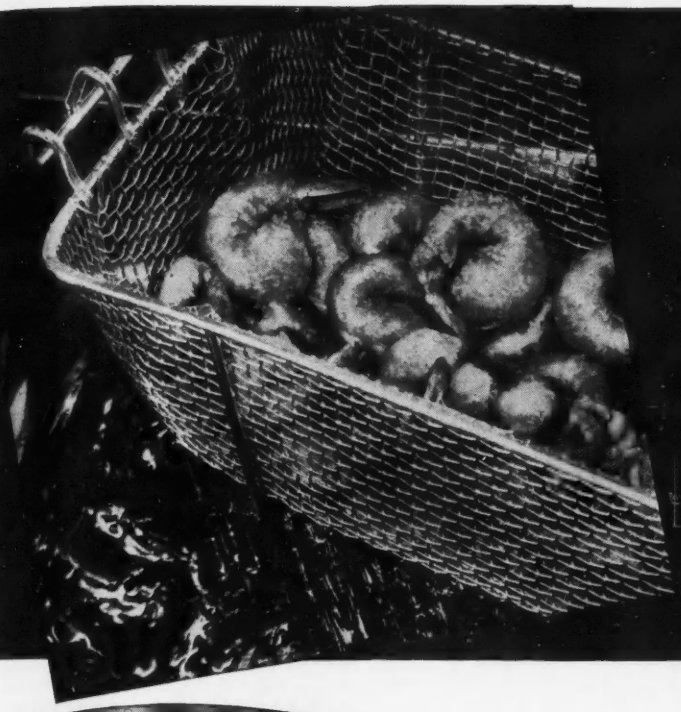
* Our central bakeshop is a source of pride and profit. P. Fairbrook.—p. 49.

Central Bakeshop. In preparing for an increased number of students, Northern Illinois State College, DeKalb, was faced with the problem of providing additional oven space for residence hall kitchens. It was decided to take the baker out of the kitchen, give him his own oven and plenty of working space, assign a potwasher to him full time, and expect him to double his productivity. A little-used storeroom was found and a central bakeshop set up. The whole installation—including the purchase of a four-tray revolving oven, a 40-gal. steam-jacketed kettle, a large two-compartment pot sink, miscellaneous parts and supplies, ventilating, painting, and plastering—was done for slightly less than $5000. After six weeks of full operation, results were highly satisfying. The baker, with a full-time assistant, is now able to turn out approximately 130 pies or 22 large sheet cakes an average day, as compared to a maximum of 75 pies or 12 large sheet cakes formerly, with the help of a half-time worker only. With the addition of one more professional baker, it is hoped to increase production further to include all the needs of the public cafeteria and student union buildings. In addition to these advantages, the central bakeshop seems to be proving itself from a profit and loss standpoint, and all indications are that it will pay for itself within less than three years. The author includes a table showing an analysis of the difference between commercial and college bakeshop production prices during January 1956. The total difference is $230.78, which does not include the 40 per cent of items produced in the bakeshop and not available commercially.

FOOD ENGINEERING

Vol. 28, July, 1956

* Work simplification program. P. S. Kvenmoen.—p. 41.



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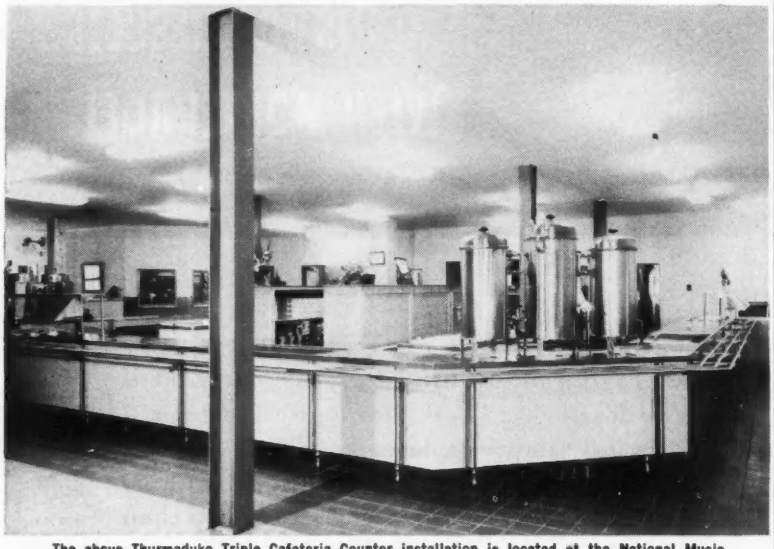
* Liquid ferment system perks up bakery performance. H. McGhee, W. C. Drews, and C. Kandlbinder.—p. 56.
* Dietary specialties "tailor-made." R. G. Morey and J. V. Ziemba.—p. 59.
* Gains for sterilized milk. H. Shuval.—p. 72.

Work Simplification. First requirement for success of any company program is the sincere backing and participation of executives and all employees involved. To get this backing, the program must be worth while and of benefit to the employees as well as to the company. The second phase is education—training and practice. Training should be set up to satisfy the two equally important aspects of any cost reduction program—the technical and the human. The technical problem concerns itself with equipment and procedural changes necessary, along with weighing of the cost of the change against the estimated saving. The human problem is brought about by the effect these technical changes have on the workers involved. There are always negative human factors which can put roadblocks in the path of progress. The first of these is resentment of criticism. To change a person's work procedure can be construed as a form of criticism. Before making a change, tell the employee of the need for the method improvement. Many times the operator himself has already thought out a good, workable procedural change. The second roadblock is resistance to change. This is best overcome by letting the employee participate in planning the change. Five specific steps are employed in the mechanics of a work simplification program: (a) Pick a job to improve. (b) Visualize the problem. (c) Analyze and criticize the present method. (d) Develop an improved method. (e) Install the new method. Step (b) calls for you to visualize the problem and make a chart of it. A Flow Process Chart may be used to follow a man or material through an entire process; a Multiple-Activity Process Chart is used to plot the activity of men and/or machines when time is the most important factor; and an Operation Process Chart may be employed to record motions of the left and right hands of the operators. Application, the final phase of work simplification is the most important, yet is most often neglected. This phase should consist of (a) advanced technical training sessions; (b) a program of recognition for worthwhile simplification studies; and (c) group participation to study and solve perplexing departmental problems.

Liquid Ferment System. A highly efficient, money-saving method of making bread and rolls is the liquid-ferment process—making bread through use of a "brew" rather than by the conventional sponge operation. The following factors were noted from observing this technique: (1) "Cheesy" off-flavors can be traced, as before, to poor sanitation practices. (2) Dough-mixing time is slashed from 11 to 12 min., to 7 to 8 min. It's done by using more fungal enzymes and by purchasing flours that mix in a shorter time. (3) Cool- or normal-temperature doughs made the liquid-ferment way produce better and consistently more uniform breads than higher temperature ones. (4) As to flour, the process is not as critical as other methods, since it's possible to use a much weaker one requiring less tolerance and mixing time. (5) The ferment does deteriorate during storage, but if carefully handled, this is almost unnoticeable within 24 hr.; up to 48 hr. it must receive additional steam proofing; after 48 hr., the deterioration can be offset through care in shop handling. Longer storage is inadvisable. (6) Light or heavy diastatic adjustment of flour apparently has little if any effect on gassing power or speed of dough fermentation, but higher diastatic levels do produce softer breads. (7) Just-as-good bread can be made with or without milk solids in the ferment. No milk solids, or less than 4 per cent calls for a buffer. (8) Results are better using superheated milk solids. (9) Maximum permissible bacteria count in extra-grade standard milk solids is detrimental to ferments stored for any length of time. (10) Temperature changes should be gentle since the ferment is "alive." (11) Most costly error for a bakery considering liquid-ferment technique would be to carry out on-the-spot experimental process adjustments at full capacity in a production-size fermenter. It is wise to install an experimental-size vat.

Dietary Specialties. The "tailor-making" of dietary products to fit specific needs of infant, convalescent, geriatric, and diet-conscious consumers is a unique and barely-tapped field. A



The above Thurmaduke Triple Cafeteria Counter installation is located at the National Music Camp, Interlochen, Mich. This world famous educational institution for talented young people occupies more than 300 buildings located on a woodland campus of over 700 acres, bordering on two beautiful lakes. Approximately 1900 students are enrolled each year.

"Everyone is pleased with our delicious food, speedy service"

Mr. J. Wendell Turner, Director of Food Service at the famous National Music Camp, writes he has received many compliments on his new Thurmaduke counters. He says, "Service is now so rapid, virtually all waiting in line has been eliminated. For example, we have served as many as 1,565 persons at one meal in considerably less than our regular serving hour.

Work is done with less effort and everyone is pleased with the delicious food and speedy service. It has also been a great source of personal satisfaction to me to have this modern installation rated by the local health authorities as among the finest in the area, from the standpoint of functional beauty and sanitation."

You can improve the efficiency of your operation as Mr. Turner and thousands of other progressive operators are doing.

If you plan to replace or add equipment, just drop us a line for complete specifications and some interesting facts on Thurmaduke exclusive advantages.

THURMADUKE

DEPENDABLE FOOD SERVICE EQUIPMENT

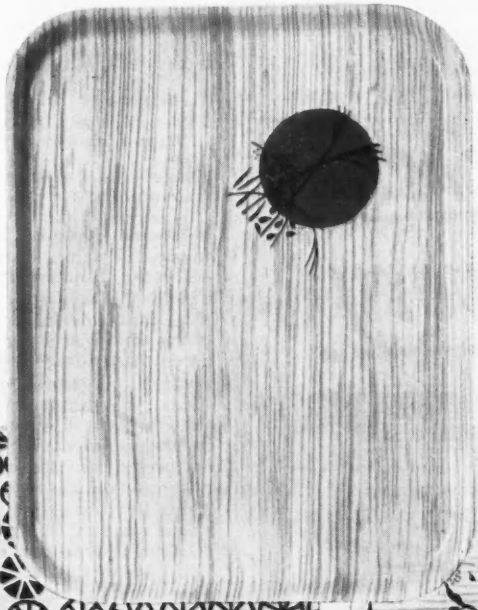
DUKE MANUFACTURING CO. 2305 NO. BROADWAY, ST. LOUIS 6, MO.

DEPT. D-9

SO NEW! SO EXCITING! SO BEAUTIFUL!

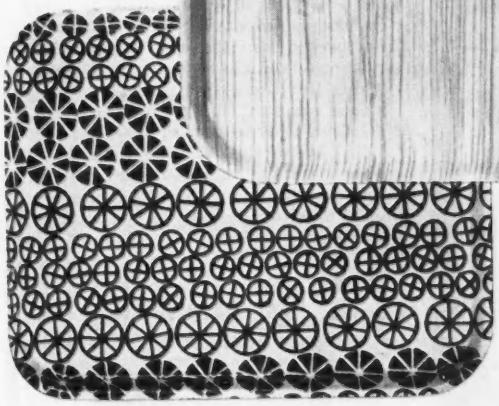
Bolta® TEMPO-TRAYS

CREATED BY THE WORLD'S FOREMOST DESIGNERS!



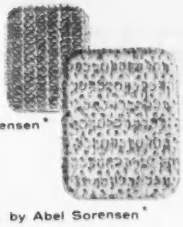
CLAIR DE LUNE, by Tatsuihko Heima*

Imagine! 34 magnificent color-and-pattern combinations to stimulate the appetite, offer a whole new dimension in meal-appeal! Bright, modern . . . designed to beautify and blend with surroundings, Bolta TEMPO-TRAYS combine the same outstandingly durable qualities of other famous Bolta trays!



WHEELS, by Bernard Rudofsky*

BROKEN BLOSSOMS, by Edward Wormley*



TRICOT, by Abel Sorensen*

BABYLONIA, by Abel Sorensen*

CHIPS, by George Nelson*

SKID, by George Nelson*

GENERAL PLASTICS

THE GENERAL TIRE & RUBBER COMPANY
BOLTA PRODUCTS DIVISION
LAWRENCE, MASSACHUSETTS

Specify Boltaflex for booths and furniture, Bolta Wall for interiors

*Designed for the STIMULUS Collection of Schiffer Prints

new *acidophilus* milk is now available with a sweet, palatable flavor. A specially concentrated *acidophilus* concentrate is sold by prescription through the drug trade, and a Bulgarian-style, cream buttermilk has been developed containing the *lactobacilli* concentrate. Now available for infants and the aged is a modified milk, which is enzyme-treated to make its proteins more readily digestible. Actually, it isn't distinguishable from regular milk in respect to flavor, appearance, or the nutritive value. Low-sodium milk is a Grade A milk that has been treated by an ion-exchange process to reduce sodium content 90 per cent. However, thiamine and riboflavin are also reduced 50 per cent during this process. A Grade A goat milk is bottled in pints and quarts for use by people allergic to the proteins in cow's milk.

Sterilized Milk Gains. Promoted by the United Nations International Children's Emergency Fund, this bacteria-free product is enjoying a booming popularity in foreign lands. The convenience of having a bottled product which can be stored for indefinite periods without refrigeration is immeasurable in desert areas such as Israel. New processing techniques have markedly improved product quality, and the Israeli milk plant is described here. Nutritionists disagree on the comparative nutritional values of sterilized and pasteurized milks. The changes in vitamin, protein, and mineral content in sterilized milk depend largely on the process used, but it is generally known that there is little loss of vitamin D and carotene. Vitamin A is reduced by about 12 per cent, and thiamine is cut between 20 and 50 per cent. Ascorbic acid is easily oxidized, and thus is almost completely destroyed in sterilized milk. However, vitamin A, the B complex, and ascorbic acid are also partially destroyed in pasteurized milk. There appears to be no significant difference between sterilized and pasteurized milks as far as availability of proteins, butterfat, lactose, and minerals are concerned.

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Savory
With a Savory toaster on the job—either gas or electric—toast is no bottleneck that slows down meal service. That's because a Savory can turn out 6 to 12 slices of toast every minute. There's never a wait for loading, never a delay waiting for delivery. Toast drops automatically into the serving tray—and what toast! Perfect, golden-brown outside, warm, soft and tender inside.
Reason for the outstanding efficiency of Savory toasters is that they operate on the exclusive conveyor principle which gives them capacity to handle even the heaviest or lightest demand—at lowest operating cost in the commercial toasting field. Ask your Restaurant or Kitchen Supply Dealer for details or write today.
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Savory EQUIPMENT, INCORPORATED
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HOSPITAL MANAGEMENT

Vol. 32, July, 1956

Tailor-made recipes. How to: streamline production, cut costs, standardize recipes. P. Aldrich.—p. 88.

* Steam cleaning of kitchen equipment. O. F. Manthei.—p. 96.

Steam Cleaning Kitchen Equipment. Cleaning, even with steam, is still work. However, it has several advantages. The most important is that with a steam cleaner, you can clean places which cannot be done by hand or are so hard to do by hand that maintenance personnel pass them over. Steam pressure forces the grease and residues out of cracks and crevices. Second, laborious and unpleasant work is done in minutes which would take hours to do if it were possible, by hand. Third, additional time is saved because steam cleaning, being more thorough, does not need to be done as often. Detailed instructions for the operation of steam cleaning equipment are given as well as a list of specific items of equipment which are used in this process at the University of Wisconsin, Madison.

HOSPITALS

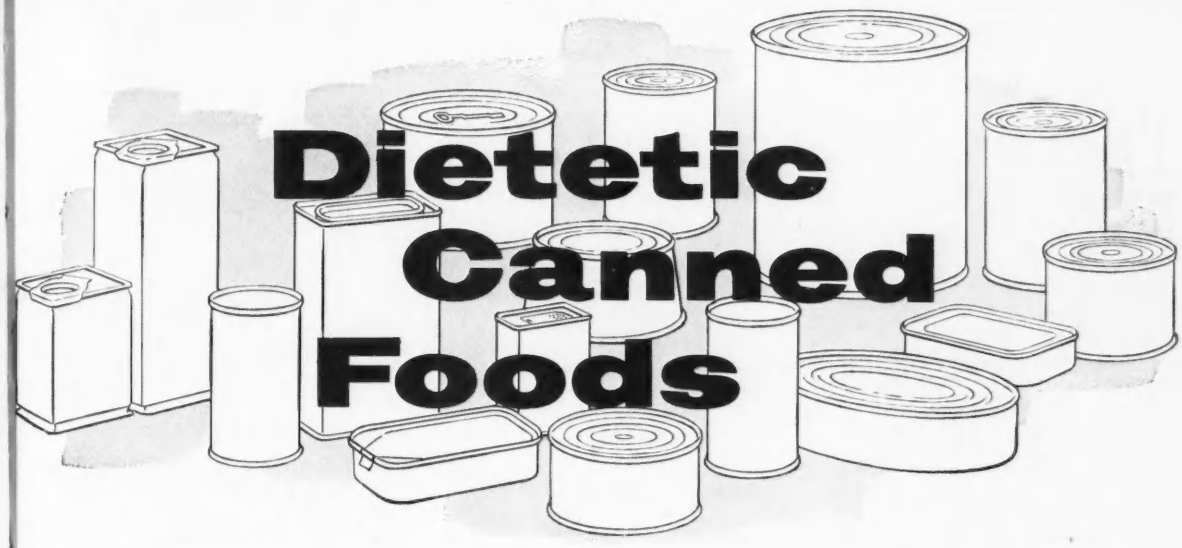
Vol. 30, June 16, 1956

* Children will eat hospital food if the dietitian tailors the menu to their needs. (Pt. 2) L. Weng, M. Heseltine, and K. Bain.—p. 74.

Vol. 30, July 1, 1956

* How to make the normal diet appealing to the patient. D. I. Anderson.—p. 52.

Feeding the Child Patient. The younger the child, the greater are the number of meals he may need. Fruit or fruit juices, plain crackers, or milk are quickly digested and do not interfere with the child's appetite at the next meal. Meals should be spaced so that he has time to become hungry but not uncomfortably so. Because children do not like stringy, lumpy, dry, or gummy foods but prefer their foods lukewarm, foods which become thick and dry on cooling should be fortified with extra milk. Meat which tends to be stringy should be ground and made into patties. Lumpiness in cereals, puddings, and sauces is avoided if ordinary care is taken in combining the liquid and dry ingredients. Children tend to dislike the strong-flavored vegetables if they are cooked too long but will relish them served raw in sticks and wedges. In general, foods easily recognized and served in reasonable quantities are more



PROVIDE WELCOME VARIETY FOR PATIENTS ON LOW-SODIUM, LOW-CALORIE AND DIABETIC DIETS

Free booklet tells patients how to plan meals

A quick look at the canned food shelves of your neighborhood supermarket shows the many types of special-purpose dietetic foods available today. Canco scientists are proud of the part they have played in helping canners formulate and pack appetizing canned foods which are useful in diabetic diets or in modified diets where calorie or sodium intake must be controlled.

Dietetic canned fruits, vegetables, poultry, fish and specialty items give variety to meals prepared for restricted diets. In addition, many conventionally canned foods are suitable for use in certain types of therapeutic diets.

American Can Company has issued a free guide to good eating for patients on diabetic, low-sodium and low-calorie diets. This unique booklet, called *So You're On a Diet*, contains a wealth of helpful information for your dieting patients.

Meal plans have been carefully calculated by hospital dietitians, home economists and members of the American Can Company's scientific staff.

So You're On a Diet tells your patient how to plan interesting, properly balanced meals in accordance with his dietary needs, whether he eats at home, carries a lunch or orders food in a restaurant.

And there's also a list of the more than 75 dietetic foods now available in cans. Write for a sample copy of this booklet today. Just fill out and mail the coupon below.

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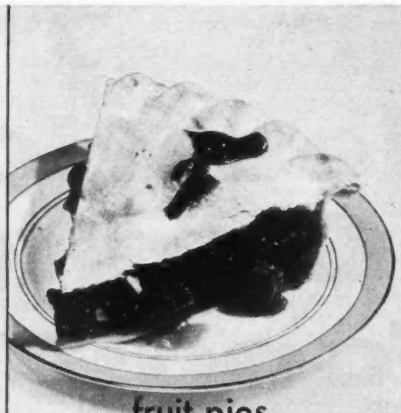
chicken chop suey

Thickened so smoothly with Minute Tapioca . . . and with a better yield, too!

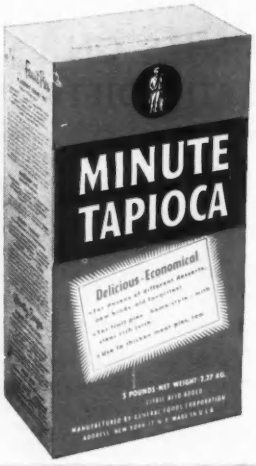


fruit pies

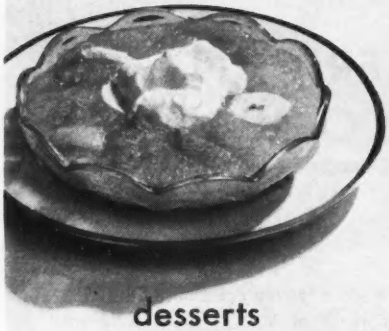
Minute Tapioca insures clear, rich juice and true fruit flavor.

soups

Thicken hearty cream soups faster! They're smooth, brighter in flavor.

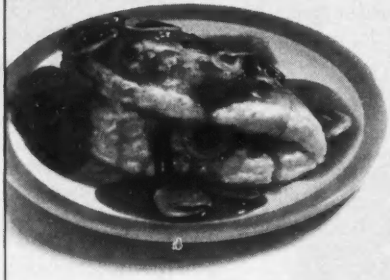


Are you making the MOST of this famous favorite?



desserts

Unusual desserts are quick and easy (like the Swedish Fruit Dessert above). Fresh-fruit flavor, and color is never clouded.



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Faster cooking, greater yield, clearer, more sparkling color, "truer" flavor.

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They just won't fall when made with Minute Tapioca!

SAVES TIME!
IMPROVES FLAVOR!
INCREASES YIELD!

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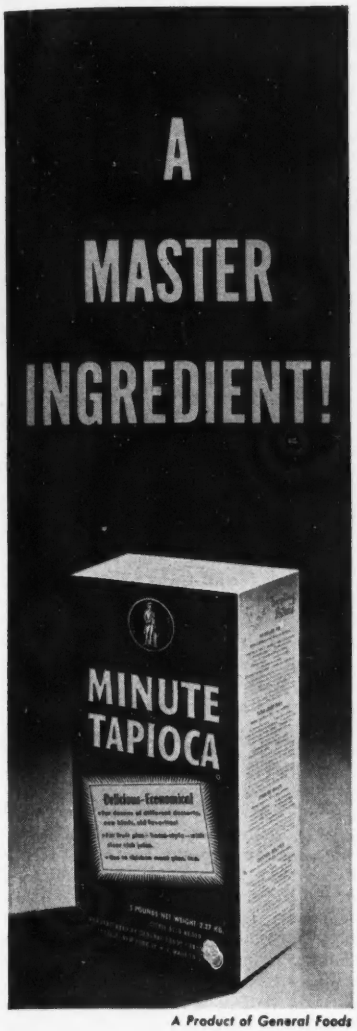

A Product of General Foods

Minute Tapioca will streamline preparation time of almost every dish you make!

For 60 years, it has been famous as a dessert and dessert ingredient. Now, thanks to General Foods research, Minute Tapioca has new and exciting horizons as a *quick thickener*. It cuts cooking time to save you food and flavor loss. It gives smoother, richer sauces; soufflés that can't fail; soups in half the time with twice the flavor!

For methods and recipes, see the Minute Tapioca package . . . or write GF Institutional Test Kitchens, White Plains, New York!

GF INSTITUTIONAL PRODUCTS DIVISION

GENERAL FOODS CORPORATION
White Plains, New York

popular with the young than are mysterious mixtures. Because of mechanical difficulties, foods easy to handle are likely to be readily eaten by the young child who feeds himself. Some foods are more acceptable to children if cut so that they can be picked up and eaten with the fingers. Foods such as meat should be cubed for the younger child. Putting the child and his food in the best possible position and giving him suitable equipment may make it possible for him to feed himself without undue exertion and to enjoy his food. Children frequently eat better in groups for it is more like the way they eat at home. They should be allowed a choice between two dishes of comparative nutritive value and should be encouraged to eat but never forced. An atmosphere which is calm, peaceful, and relaxed is as important as providing nourishing and appetizing food. Holidays and birthdays offer a special opportunity to make mealtime appealing, and even a bland diet may be made more attractive by the addition of a gay napkin or tray favor.

Normal Diet Appealing to the Patient. The foods which make up the adequate diet for the sick person are important. They should be favorite foods. Variety from day to day is important, but variety should not be attained by resorting to foods which are not popular when a person is well. Few adults like puréed foods, for example. For some modified diets, purées may be necessary, but for most short-term patients let us omit them. Use juice or the soft, tender vegetables, such as carrots, squash, and young green beans for those on soft diets. Another important element to consider is ease of eating. Lettuce wedges are often returned untouched, while shredded lettuce is eaten. Very sweet foods do not appeal to sick people. A lemonade with only a small amount of sugar added is popular, as is custard made with little sugar, vanilla, or spices. But these illustrations do not mean that hospital food should be tasteless; it should definitely be tasty if it is expected to tempt the appetite of sick people, but without high seasoning; hot food should be hot and cold food cold. The selective menu is one of the greatest psychologic aids to get the patient to eat the "given amount." By using fresh fruit in summer, canned fruit in winter, and dry cereals, a fair amount of choice may be added to a menu. By making one vegetable a type which can be used on the sort diets, you can have two vegetables without extra work. But from the patient's point of view, food begins when the tray is placed at his bedside, and if he sees sparkling cleanliness, colorful tray appointments, and food which looks "good enough to eat", he is likely to start eating in the proper frame of mind. He will want to eat.

THE HOTEL MONTHLY

Vol. 64, July, 1956

* Rock Cornish Hen—an entrée with exact portion cost.—p. 36.

Rock Cornish Hen. Introduced in limited quantities only a few years ago, Rock Cornish Hens are now featured on daily menus all over the country and are specified as the main course for high-priced banquets and other special parties. While the hens command a rather high menu price, the portion cost is well below many other standard items. The birds are sold by the dozen with weight per bird clearly specified, making it possible to predetermine sale prices and have the assurance that the items will yield whatever percentage of profit is needed to balance the menu. General practice is to serve a whole bird to each order, and because of the delicate flavor and texture of the meat, they must be cooked to order to insure that they reach the diner in perfect condition. For small parties, the preferred manner of preparation is to split the birds and broil as with small chicken. For large functions, they are best placed in large roasting pans with diced celery, onions, and a small amount of carrots. Allow space between each bird for good circulation of heat. Keep oven heat at 350° to 375°F. and time the cooking period (about 1¼ hr.) so that the birds will be served "at the peak of perfection." Wild rice, canned green grapes, and parsley are colorful garnishes.

INPLANT FOOD MANAGEMENT

Vol. 3, June, 1956

* Portioned meat, fish, tea, gas appliances in food show spotlight.—p. 32.
* $64,000 answers to personnel questions.—p. 42.

Do-It-Yourself Preportioning. The Food Committee of the National Restaurant Association presented results of its research on preportioned meat cut versus restaurant-prepared meats at the NRA convention. "Do-it-yourself" liver was prepared at a cost of 11½ cents per 4-oz. serving, whereas frozen liver roll costs 10 cents per 4-oz. serving. Films showing the production of beef loin by the processor of steaks selling for $1.57 per serving contrasted with restaurant-produced steaks of the Committee's research, costing $1.77 per serving plus labor and overhead. Savings in the use of commercially produced, ready-to-cook hamburgers, pot roast, rib roast of beef, twin cut pork chops, precooked sausages, ham slices, leg of lamb, lamb chops, veal cutlets, pattied steaks, Swiss steaks, and portioned chickens were also outlined. Three rules for safeguarding non-frozen portion-size meat cuts were presented: dependable supply; rapid turnover; and low temperature storage. The safe holding times of non-frozen meat stored at 30° to 35°F. are: for beef cuts, six days; pork cuts, four days; ground beef, three to four days; poultry, six to seven days. What makes a properly cooked steak? The following conclusions were reached: (a) Thickness of the steak, not weight, is the factor which regulates broiling temperature and time. (b) Frozen meats have a greater time tolerance—thus are advantageous for the operator. (c) Non-frozen thin steaks are best seared in the pan, using a so-called pan-frying operation. (d) Thaw thicker steaks first if they are to be cooked on the broiling rack. (e) When to thaw or not to thaw—

do not thaw steaks ½ in. or under; over 1 in., but under 1½ in., cook either way; steaks over 1½ in. are best thawed before cooking. Innovations in seafoods included fish sticks, portion-sized pieces of fish, and greater use of lobster tails. French fried lobster was featured and a basic sauce for lobster dishes offered. A new kind of shrimp salad consisting of pineapple chunks, orange and grapefruit slices, avocado slices, and small shrimp was also introduced. Among the appliances displayed was the $40,000 TeaMaker which serves both hot and iced tea, a deep-fat frier which holds 38 lb. fat and fries frozen cooked potatoes in 4½ min., and super-speed ovens. A bottom-fired, open-hearth broiler using ceramic material in place of charcoal was discussed. This oven saves one-fifth to one-tenth of the cost of using charcoal, giving the "charcoal" flavor (which isn't really charcoal but a flavor created by the exploded grease from the food which creates smoke and the "charcoal" flavor).

Answers to Personnel Questions. The Education Committee of the National Restaurant Association staged a quiz show at the recent NRA show much in the manner of its TV counterpart, the "$64,000 Question." Among the questions discussed were: "Define personnel management and explain why it's important to restaurant operation." "How can you encourage employees to take an interest and pride in pleasing customers?" "What is the key to success with personnel in the restaurant industry?" "How do you get those ideal employees everyone in the food service business dreams of hiring—on-the-ball, courteous workers?" Some of the answers are reported here.

NEW MARKET FORGE METHOD
OBSOLETES RANGE TOP COOKING
5 WAYS!
1. Faster!
Cooks twice as fast with less shrinkage, less loss of food values.
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Eliminates pot watching and pot washing. Less manpower needed!
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No waste heat, small preheat time — saves 50% on fuel bills.
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Twice the work in half the space of range tops!
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Keeps natural color and flavor — cooks small quantities quick!
Model 2MK — 4 bushel capacity steam cooker and 40 gal. kettle with either a gas or electric boiler in the base. This combination provides the 5-way benefits of steam cooking plus exclusive kettle features including a lower working height, faster operation, complete safety against hot pipes and ease of cleaning. As a combination it saves greatly on space and requires only one set of connections.
Send today for detailed specs on this amazing new combination, and for the illustrated folder showing the complete MARKET FORGE line of steam cookers.
"GO FORWARD with MARKET FORGE"
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INSTITUTIONAL FEEDING AND HOUSING

Vol. 7, July, 1956

- Key to better standards: plan for systematic supervision.—p. 10.
- How to buy better bread.—p. 15.
- Buying asparagus.—p. 15.
- Quick switch counter.—p. 18.
- Check your first aid supplies.—p. 34.
- Planning cuts labor costs.—p. 34.
- Dishing up ice cream profits.—p. 35.

Systematic Supervision. A three-way feeding set-up at an airport terminal is described: (a) a 24-hr.-a-day coffee shop; (b) a dining room and lounge open for lunch and dinner; and (c) a cafeteria for air terminal employees, plus complete facilities for in-flight meal service. Food purchasing for all three restaurants and in-flight feeding is done as a unit. The only separation of food costs is between liquor and food. One production kitchen serves all three outlets, plus the in-flight service. With the exception of prime ribs, all meats are preportioned in the kitchen. Vegetables are prepared and cooked here, except peas which are cooked in steam-jacket kettles in the service kitchen. Seven waitresses are on duty in the coffee shop at one time, three bus boys and three counter girls in the cafeteria, and twenty-one waitresses in the dining room. Fifteen of the 169 employees on duty every 24 hr. are supervisors—a high percentage which this management feels pays off in efficiency. Employee training is handled on the job. A guide book for hostesses and waitresses is supplied as well as a supervisory manual. Employees are carefully chosen, and policy is to close a section rather than employ a poor waitress. The organization chart used in this food service operation is illustrated.

Buying Bread. In selecting bread, check for the following specifications: (a) crust—uniform in color and thickness; (b) irregularities—no cave-ins; (c) color—golden crust, clear white or yellowish inside—grayish cast denotes inferior flour; (d) texture—evenly soft and velvety wih no large holes; (e) consistency—neither crumbly nor doughy. The easily-handled Pullman loaf weighing 2 to 3 lb. is an all-around sandwich shape with slices measuring about 4½ by 4½ by ¼ in. A standard slice is usually ⅜ in. Buy one day's supply wherever practical. Keep it wrapped until used, and store in cool, dry, well-ventilated place. Leave plenty of air space around it. Bread may be refrigerated for short periods to inhibit mold but too long a period under refrigeration will cause bread to become too firm. Bread may be freezer-stored at 0°F. or lower for longer periods. Wrap securely in moisture-vaporproof material. To use, unwrap and thaw at room temperature. Heat uncovered in a hot oven for about 5 min. Freezing stale or old bread will not

to help you solve
many diet problems

Sustagen

therapeutic food for complete nourishment

A dilemma frequently confronting the dietitian arises from the fact that the nutritional needs of sick or injured patients are increased at a time when appetite and the ability to eat are often impaired. Further complicating the problem of diet in illness are physiologic disturbances which require the restriction of certain valuable nutrients—sodium, cholesterol, purines, etc.—common in many foods.

Type of Diet	Amount of Sustagen	Calories	Protein Gm.	Carbohydrate Gm.	Fat Gm.	Comment
Low purine diet	Sustagen, 530 Gm.	2050	124	350	19	no purine nitrogen; 42 mg. uric acid
Low cholesterol diet	Sustagen, 530 Gm.	2050	124	350	19	150 mg. cholesterol
High protein, low fat diet	Sustagen, 580 Gm.	2250	137	385	20	contains all amino acids in well balanced amounts
Liquid diet	Sustagen, 540 Gm.	2100	127	360	19	viscosity suitable for tube feeding
Bland diet (Peptic ulcer)	Sustagen, 570 Gm.	2200	134	377	20	buffering capacity of Sustagen is effective and prolonged
Liberalized low sodium diet*	Sustagen, 465 Gm.	1800	110	310	16	980 mg. sodium

*Note that the sodium content of Sustagen limits its use when dietary restriction of sodium must be severe.

Sustagen® is the only therapeutic food which contains all known dietary essentials, requiring only the addition of water. In addition to nutritional qualities Sustagen was designed to meet many physical and biochemical requirements of therapeutic nutrition. Thus Sustagen may be used, by mouth or by tube, as the only source of food or to fortify the therapeutic diet.

Sustagen is supplied in powder form in 1 pound, 2½ pound and 5 pound cans. One pound provides 1750 calories, including 105 Gm. protein.

MEAD | SYMBOL OF SERVICE IN MEDICINE

MEAD JOHNSON & COMPANY • EVANSVILLE 21, INDIANA, U.S.A.

restore freshness. Keep bread containers clean and odorless by washing with baking soda dissolved in warm water.

Buying Asparagus. Fresh, green asparagus is often priced by the bunch but more often by the pound. When in prime condition, it should be tender, brittle, and have firm, compact tips. Avoid those with a wilted appearance and spreading of the tips. It is vital that fresh asparagus be kept cold and moist at all stages of marketing and storage. A small amount of white at the butt end helps to preserve the moisture in the edible part of the spear. Canned asparagus for the institutional trade includes the following types: salad points, tips, spears, cut spears, soup cuts, and cuts with tips removed. Frozen asparagus is packed in the same types. Store fresh asparagus in the refrigerator. Do not remove butt ends until ready for use. Buy only for daily use. Scrub each stalk lightly with a vegetable brush in cold water. After scrubbing, *snap* off butt ends.

Quick Switch Counter. A resort, table-service restaurant turns into a self-service cafeteria during the off-peak months. A portable cafeteria counter makes the conversion possible. Connections for sewage, electricity, and both hot and cold water are attached to lines running through the cafeteria counter by removing a wall plate. Work-height equipment on legs or rollers is fastened to the top of the laminated plastic counter by an angle strip of stainless steel. A circuit breaker box and individual valve cut-offs are installed on the utility lines. Heavy duty, water-proof cable is run through for the electrically operated and heated equipment. High-pressure, aircraft-type rubber hose is used for water and sewage. The complete changeover is made over night. During rush seasons, the counter is stored and tables are rearranged for waitress service.

First Aid Supplies. First aid can keep a minor injury from developing into something serious. All injuries, no matter how small, should be reported, not only to cut possible infection and loss of time but also to pinpoint causes for correction and to lessen the chance of legal action arising from inadequate treatment. A first aid kit should be kept in an accessible place in the kitchen area and should contain: roller bandages (1- and 2-in.); assorted sterile dressings in individual packages (1-, 2-, 3-, and 4-in. widths); 1 triangular bandage; sterile compression dressings in individual containers; sterile adhesive bandages; safety pins, scissors, forceps; ampules of aromatic spirits of ammonia; burn dressing material, such as individually wrapped sterile gauze squares impregnated with sterile petrolatum; antiseptic; and splints. The quantities of these materials should be carefully maintained. "Unit first aid" supplies provide dressing and treatment in a use-once-only-and-throw-away package. In many operations they have proved to be more practical than bulk supplies and make stocking supplies for recurrent injuries easier. The materials also stay sanitary.

Cutting Labor Costs. Seven basic principles of personnel management are practiced among the cafeteria employees at an aircraft corporation: (a) employment standards—employees undergo a security check; (b) training for versatility—new girls are assigned to the coffee tables in each operation and as vacancies occur are advanced through various posts to the steam table; (c) an advanced salary scale—an above-scale wage is paid, assuring the highest type of help and a low turnover; (d) tips for waitresses—in the two dining rooms they earn in excess of $60 per week in take-home pay through a system whereby 15 cents is added to every check for service in the main dining rooms; this money is pooled and divided among the girls; (e) smoothed-out slack seasons—frequent personnel layoffs result in a drastically reduced cafeteria load; to smooth out these slack periods without laying off food service employees, an alternate shift method is used; (f) complete choice of menu for employees—when the noon rush is over, cafeteria employees can eat what they want and may help themselves to coffee or snacks during the day; (g) hospitalization and life insurance for all cafeteria employees, with management paying 60 per cent of the cost.

Ice Cream Profits. Dipping technique in ice cream service makes the difference between profit and loss. There are seven standard scoops; the right scoop should be selected for your use. Before using, shake off water, then tap on a clean, dry, folded towel. This pre-

Announcing the NEW 1956 CRES-COR CABINETS

. . . for efficient, quantity handling of portioned or bulk food, baked goods, china, and a host of other items under strictest sanitary conditions. Whether for inter-department or outside delivery, these new HI-TENSILE utility cabinets will withstand the hardest usage and remain bright and attractive — virtually a display piece in itself. Famous CRES-COR corrugated sides permit tray or pan spacing variation which adds to the versatility of these cabinets. Insulated models available. Also models with heating or cooling units.

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Meat...

and Its Place in the Diet in Congestive Cardiac Failure

Meat has an appropriate place in the moderate-protein, low-sodium, acid-ash diet advocated in the dietary management of patients with congestive cardiac failure.[1] When extreme sodium restriction is necessary, the meat allowance is regulated accordingly.

Lean meat allows maintenance of a positive nitrogen balance without excessive protein intake, because its amino acids match the quantity and proportions needed for tissue synthesis and repair.[2,3] In the fresh state as purchased it supplies only small amounts of sodium ranging from approximately 50 to 100 mg. per 100 grams. Due to its acid-ash composition (equivalent to 4 to 38 ml. of normal acid per 100 grams of meat) it may facilitate diuresis.[1]

In addition to these important features, meat contributes valuable nutritional factors by virtue of its generous supply of high quality protein, B vitamins, and essential minerals—iron, phosphorus, potassium, and magnesium.

Easy digestibility, a prime requisite of foods eaten by the patient with congestive cardiac failure, is another outstanding quality of meat.

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1. Odel, H. M.: Nutrition in Cardiovascular Disease, in Wohl, M. G., and Goodhart, R. S.: Modern Nutrition in Health and Disease, Dietotherapy, Philadelphia, Lea & Febiger, 1955, p. 709.

2. Berg, C. P.: Utilization of Protein, J. Agr. & Food Chem. *3*:575 (July) 1955.

3. Best, C. H., and Taylor, N. B.: The Physiological Basis of Medical Practice, ed. 6, Baltimore, Williams & Wilkins, 1955, p. 638.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

American Meat Institute
Main Office, Chicago...Members Throughout the United States

vents drops of water from freezing into ice crystals and ruining texture and taste. Never sink the dipper more than ½ in. into the ice cream and cut and roll—don't dig. Always start at the edge of the container and make successive dips in circles across the surface until an even layer is removed. Keep the can stationary, the cutting edge of the dipper sharp, water in the dipper well clean and free running, and change the towel frequently. Keep the ice cream seal unbroken until ready to use. A thermometer in one of the ice cream cans will assure that you keep a temperature ranging from 8° to 12°F. Avoid storing anything but ice cream in ice cream cabinets. A cost chart which calculates scoop costs for the seven standard dipper sizes is included, for ice cream ranging from $1 to $3.50 per gallon.

INSTITUTIONS

Vol. 39, July, 1956

* Reap rewards of controlled food production. P. Aldrich.—p. 16.
* Here's pattern for popular menus.—p. 26.
* Steam for glass, pot and pan washers. A. M. Macfarlane.—p. 31.
* Vertical travel solves 5-floor food service problems. —p. 124.
* Modernization erases 20-year-old errors. M. W. Northrop.—p. 130.

Controlled Food Production. The time has passed when cooking can be fondly set among the arts and left to simmer in its own juices. It requires much planning and attention to detail, and the success of such handling depends on conforming to regulations and specifications and constant checking to keep things in line. Formula cooking strives to standardize procedure in the kitchen so that both quality of the food is consistently high and the quantity produced is predictable. Without formula cooking, you can be almost sure that the quantity produced will be too great or too little. A formula must have certain characteristics: (a) It must be specific about every ingredient which goes into it. (b) It must be specific about how much of each ingredient goes into it. (c) It must be specific especially about what is to be done with every ingredient. We have a tendency to economize on paper when we write directions. Be sure of these directions. Try to visualize them at work. Don't be "Scotch" with them unless you're prepared to take the consequences.

Pattern for Popular Menus. Most cafeteria menu planners have a pattern to guide their planning. This pattern should be flexible to allow for added variety in foods, for patron preference sampling, to take advantage of the seasonability of certain foods, and especially to accommodate itself to available labor and facilities. The modern trend in cafeteria menu planning is toward limiting the choice of foods to avoid food loss and reduce labor cost. Besides these factors, it is unappetizing for patrons at the end of a serving period to see wilted salad, dried cakes, and so on. It is inevitable that the last patrons will see a depleted counter unless there is a quantity of food left over, but several shorter sections of counter which can be closed off as patrons decrease helps to avoid this. Another important tool in menu making is a record of the number of servings of each food item sold in the past and when it was served. The entire menu on the days an item was sold should be considered as certain foods compete with each other in popularity. The cafeteria menu planner can contribute to the nutritive adequacy of the patron's selection by serving only pure fruit juices and avoiding artificially flavored beverages. If a chocolate beverage is served, it should be a chocolate milk or cocoa made with milk rather than a so-called chocolate drink which is often made with water. The menu planner who also prices the food can see that milk and other nutritionally essential foods are favorably priced and that the price of less essential items is increased to compensate.

Steam for Glass, Pot, and Pan Washers. Glass washers on the market today use the heat from steam in one of the following methods: (a) by means of the injection of the steam into the hot water storage system; here the steam is actually mixed with the hot water by means of a mixing valve, and the glasses are rinsed by either spraying or immersion; (b) by use of a heat exchanger; the hot water passes through a series of copper coils in a chamber of steam, but is not mixed with the steam. By this steam-heating device, the rinse is main-

Speed up... the clean up

with NEW J&J tubular model dish trucks

Speed the trip to your dish-washing area with this smooth looking, easy rolling tubular dish truck. *It's easy to clean . . .* with no sharp or rough surfaces to collect food or dirt. *It rolls like a dream . . .* on J & J double ball bearing casters with rubber tired wheels. *It's ruggedly built . . .* to withstand the rough bumps and knocks of average mass feeding installations.

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Cheese sandwich filling with MORCAL has 51% more calories
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serve hot or cold

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1 case 300 1¼-ounce envelopes
each envelope makes 1 cup
1 case 24 15-ounce tins
each tin makes 2½ quarts
1 case 6 #10 tins
each tin makes 3 gallons

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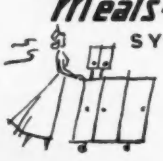

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Amer. Dietetic Assn.
Convention

tained at the desired temperature; (c) by direct application of steam to the glasses, which are first given a short, hot-water rinse to flush off residue wash water. Then the hot water automatically shuts off and live steam is sprayed on the glasses through the same rinse mechanism. This final rinsing and sterilizing subjects the glasses to a very high temperature so that they air-dry almost immediately. The automatic utensil washer washes, rinses, sanitizes, and allows the utensils to dry quickly due to the static heat of the rinse water at not less than 180°F. Such machines are usually installed in kitchens with a direct steam supply line. The steam is used to heat the rinse water before it enters the machine and to maintain it at the uniform temperature of not less than 180°F. during the rinsing process. Easy-to-read controls are found on all modern utensil washers. In addition to switch timers and start-and-stop controls, there are gauges indicating wash water temperature, rinse water temperature, and pump pressure. A red indicator light stays on during the wash-rinse cycle as an added safety measure. The soiled utensils are placed in an inverted position on holding racks and the door is closed. Some types of machines carry the pots and pans through the machine, and as the clean utensils move out on one side, a rack of soiled pots and pans is ready to move into the machine from the opposite side. During the washing and rinsing, the utensils are sprayed from above and below. Utensil washers are also available today where the soil is removed by the action of high pressure, high velocity jets of recirculated hot water.

Five-Floor Food Service. A Houston, Texas, club finds a "vertical" kitchen is the best solution to the problem of floor space. Five consecutive floors are utilized with kitchens on the eighth, ninth, and tenth floors. Vertical transportation consists of: two automatic service elevators for personnel, equipment, and food, both of which are limited to serving just the food service floors; a large freight elevator which runs to the street; two floor-level dumb waiters placed near each end of the kitchen food preparation space; and stairs located at the food service end of long service corridors. A complete layout showing flow of materials in presented.

Modernization Erases Old Errors. "Before" and "after" floor plans of the Food Service Department at the King County Hospital System, Seattle, Washington, tell the story of how modernization erased twenty-year-old errors. A new wing was added and extensive changes made in existing facilities at the cost of $4 million. Specifically, in the storage area, a large freezer has been added to the main storeroom in the basement. An adequate, cross-ventilated day storeroom has been provided at the rear end of the department. In the meat-cutting unit, removal of partitions has improved traffic. Baker and vegetable units exchanged places, and storage and pre-preparation areas now are assembled at the far end of the department. In the production area, steam equipment was moved to a position at right angles to the range unit so that the cooks' tables form an "L" which means less steps for the cooks. Sandwiches had no home in the old kitchen and were made on the cook's table. The salad unit was inconvenient also. A salad and sandwich unit is now located between the cafeteria and the tray service, with a pass-through refrigerator to the cafeteria. The special diet kitchen has shrunk to its proper size and function—a counter space where special beverages are prepared. It was decided to change from decentralized to centralized tray service, with two parallel lines. A 22-ft. dishwashing machine between the two serving lines provides dishwashing for both lines at the rate of 10 trays per minute. The two cafeterias in the old department were planned for service to about 300 persons three times a day, using a mixed menu and a short serving period. Two new counters are augmented by a coffee shop.

THE MODERN HOSPITAL

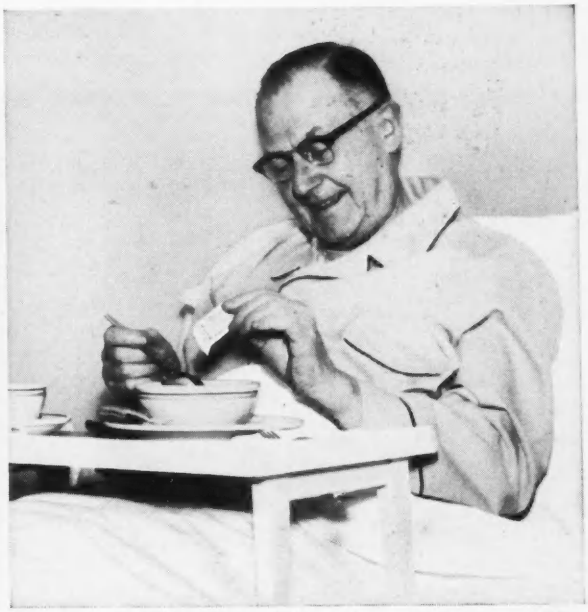
Vol. 87, July, 1956

* Centralize food control for efficiency. H. E. Cassidy.—p. 116.

Centralized Food Control. St. Luke's Hospital in New York City maintains a centralized system of food purchasing and control which has reduced waste and food and labor cost. A basic menu is prepared for ward and semi-private patients which, with additions and some changes, is used also for private patients. Once a week the next week's menu is checked for number of food items requested, and figures are submitted to the purchasing dietitian. She compiles the items, checks storeroom inventories, takes bids, and places orders. All inventory items are ordered out of stock on requisition forms. They are marked off the perpetual inventory, priced, and listed on the requisition forms when the cycle from kitchen to storeroom is completed. Canned inventory items are ordered every four to six weeks; perishable items every few days. Frozen food contracts, made for one year, are signed only after rigid testing. Orders are then placed weekly. All milk products have a stock number, are a direct charge, and requisitioned a day early. Fresh fruits and vegetables are ordered daily, a day in advance, are bought by the pound and charged to the vegetable room, which in turn, sells to the kitchen. Meat is charged directly to each kitchen as it is delivered. All baked goods are made in the hospital bake shop. Standardized recipes and portion control are used throughout the kitchens. A daily operation sheet is completed each day, and daily and cumulative meal cost is always available. A food summary sheet is sent to the accounting office at the end of the month. Various colored requisition forms are used to indicate particular foods, which makes the accounting operation easier. A diagram showing the remodeled storeroom, which centralized buying, storing, testing, requisitioning, and issuing of food, is included, as well as an example of the daily operation record.

How Diamond Crystal seasoning packets end danger of cross-infection from dispensers

Old-type salt, pepper and sugar dispensers are often sources of infection. Require constant washing, sterilizing and servicing. Require storage space for both themselves and bulk seasonings.



Diamond Crystal packets are individual seasoning containers. They are disposable and sanitary. Need no servicing. And your patients appreciate their modern convenience.

Exclusive Diamond Crystal salt, pepper and sugar packets are hygienic. Save you money on labor and dispenser replacement

Old-fashioned seasoning dispensers can be an expensive problem to hospitals. They get dirty quickly. Shakers and bowls need constant cleaning. Re-filling. Sterilizing.

Considering the price of labor today, servicing several thousand shakers can really run up your operating costs.

Packets solve problem

Diamond Crystal seasoning packets are disposable. Hygienic. Eliminate dangers of cross-infection from dispensers.

Each packet contains a generous serving of either pure Diamond Crystal salt; spicy ground black pepper; or fine granulated sugar. When the patient finishes his meal, the packets are thrown away.

There is never the danger of broken glass dispensers when you serve packets.

Exclusive "shaker" action

Only Diamond Crystal packets let you *shake on* seasoning. Their sturdy fluted paper construction allows the same *method* of application as old-type dispensers—without the costly need of regular washing, filling and sterilizing. Your saving on dispenser servicing alone more than makes up for the slight additional cost of packets.

Exclusive "Shaker action" of Diamond Crystal packets allows controlled application of seasoning.

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See for yourself how Diamond Crystal packets can save you time and money. Just mail the coupon below. You will receive a free sample box of 100 Diamond Crystal salt, pepper and sugar packets for your own use by return mail.

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Please send me a free sample box of your seasoning packets.

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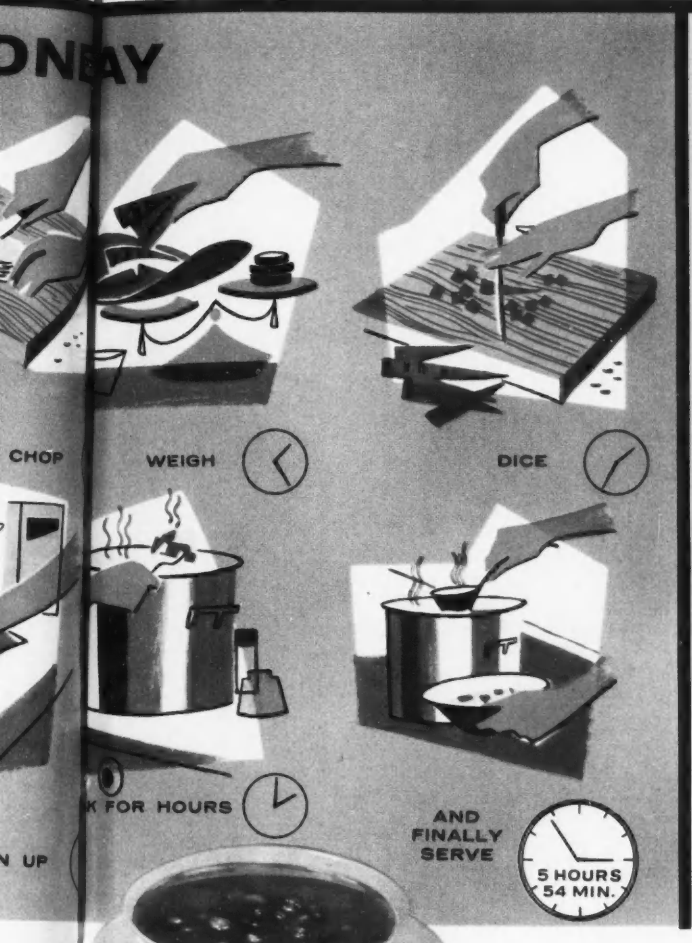

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Heinz 51-oz. Chef-Size Soups are condensed—one tin makes two.

TENTATIVE PROGRAM, 39TH ANNUAL MEETING
THE AMERICAN DIETETIC ASSOCIATION
MILWAUKEE, WISCONSIN—OCTOBER 9–12, 1956

All meetings, unless otherwise specified, will be held at the Milwaukee Auditorium, October 9–11.

Sunday, October 7

2:00 p.m.–8:00 p.m.—REGISTRATION, Hotel Schroeder

Monday, October 8

8:00 a.m.–9:00 a.m.—REGISTRATION OF DELEGATES TO THE HOUSE OF DELEGATES, Hotel Schroeder

9:00 a.m.—MEETING OF THE HOUSE OF DELEGATES, Hotel Schroeder (members of the Association are urged to audit this meeting)

8:00 a.m.–8:00 p.m.—REGISTRATION, Hotel Schroeder

12:15 p.m.—LUNCHEON, Hotel Schroeder (members of the House of Delegates and Alternate Delegates only)

1:30 p.m.—MEETING OF THE HOUSE OF DELEGATES, Hotel Schroeder

7:00 p.m.–10:00 p.m.—GEMÜTLICHKEIT, *Welcoming Event*, (by ticket only)—Honoring A.D.A. Coordinating Cabinet, State Presidents, and Exhibitors, Hotel Schroeder

Tuesday, October 9

8:00 a.m.—BREAKFAST MEETING, HISTORY OF OUR ASSOCIATION (by ticket only)—Anna Boller Beach, *Chairman*, Hotel Schroeder

8:00 a.m.—CONFERENCES AND DISCUSSION PERIODS (limited attendance), Hotel Schroeder

Weight Control Programs—Julia A. Barney, Department of Dietetics, Baylor University Hospital, Dallas, *and* Elizabeth McCune, Department of Dietetics and Nutrition, University of Kansas Medical Center, Kansas City

Cycle Menus for Union Buildings and Residence Halls—E. Lynette Gatten, Union Building, Michigan State University, East Lansing

Labor Time in the Department of Dietetics—Byrdine Tuthill, Department of Dietetics, University Hospital, University of Missouri, Columbia

Dietary Consultation to Homes for the Aged—Izola Williams, Nutrition Service Unit, Ohio Department of Health, Columbus

Evaluating the Nutrition Program Designed for Student Nurses—Eleanora Sense, Ed.D., Educational Dietitian, Chicago Wesley Memorial Hospital, Chicago

8:30 a.m.–4:30 p.m.—REGISTRATION, Milwaukee Auditorium

9:30 a.m.–5:30 p.m.—EXHIBITS, Milwaukee Auditorium

10:30 a.m.—OPENING SESSION

Invocation—Monsignor Edmund J. Goebel, Superintendent of Schools, Department of Education, Archdiocese of Milwaukee, Milwaukee

Introduction of Officers

Women in the Professional World of Tomorrow—Alice K. Leopold, Assistant to the Secretary of Labor for Women's Affairs, and Director, Women's Bureau, U. S. Department of Labor, Washington, D. C.

1:30 p.m.—BUSINESS MEETING OF MEMBERS OF THE AMERICAN DIETETIC ASSOCIATION: A View of the Past with a Look to the Future

3:30 p.m.—MANAGEMENT TODAY IN FOOD SERVICE

Panel: Types of Management

3:30 p.m.—DIABETES AND TODAY'S RESEARCH

An Approach to the Prediction of Diabetes Mellitus—Stefan S. Fajans, M.D., Associate Professor, Division of Endocrinology and Metabolism and the Metabolic Research Unit, University of Michigan, Ann Arbor

Working with Children at the Joslin Camps—Alexander Marble, M.D., Joslin Clinic, Boston

Treatment with New Oral Sulphonamide Compounds—Henry T. Ricketts, M.D., Professor, School of Medicine, The University of Chicago, Chicago

8:00 p.m.—PRESCRIPTION: IMAGINATION AND INITIATIVE, Hotel Schroeder

Our Profession Moves Ahead—E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa

Successful Leadership—Paul J. Mundie, Ph.D., Consulting Psychologist, Humber, Mundie & McClary, Milwaukee

Wednesday, October 10

8:00 a.m.—CONFERENCES AND DISCUSSION PERIODS (limited attendance), Hotel Schroeder

Clinic in Community Nutrition Problems—Marjorie M. Morrison, Chief Nutrition Consultant, Florida Board of Health, Jacksonville *and* Mary Reeves, Regional Nutrition Consultant, Children's Bureau, Department of Health, Education and Welfare, Chicago

Clinic in Diet Therapy Problems—Elmira E. Blecha, Instructor in Dietetics, VA Hospital, Houston; Alice E. Heuberger, Director of Dietetics, Mount Sinai Hospital, Chicago; *and* Arlene Payne, Educational Director, Department of Nutrition, University of Kansas Medical Center, Kansas City

Clinic in Food Administration Problems—Beatrice Donaldson, Ph.D., Head, Institution Management Laboratory, Department of Foods and Nutrition, University of Wisconsin, Madison, *and* Marjorie E. Arkwright, Manager of Food Service, Illini Union, University of Illinois, Urbana

8:00 a.m.—SEMINAR: Teaching of Students in Hospital Administration (limited to those active in this area)—Beulah Hunzicker, Director of Dietetics, Presbyterian Hospital, Chicago

8:30 a.m.–4:30 p.m.—REGISTRATION, Milwaukee Auditorium

10:00 a.m.–5:30 p.m.—EXHIBITS, Milwaukee Auditorium

9:30 a.m.—AIDS TO SUCCESS

Institutional Layouts—Melvin Dykman, Dykman's Restaurants, Madison

Communications in Planning New Facilities—Edith Jones, Chief, Nutrition Department, Clinical Center, National Institutes of Health, Bethesda

Improving Sanitation—W. L. Mallmann, Ph.D., Professor, Department of Microbiology and Public Health, Michigan State University, East Lansing

9:30 a.m.—NUTRITION IN CHILD HEALTH

Growth of Children in Contrasting Areas of Peru—Martha F. Trulson, D.Sc., Assistant Professor, Harvard School of Public Health, Boston

Metabolism and Growth in Adolescence—Joseph A. Johnston, M.D., Pediatrician-in-Chief, Henry Ford Hospital, Detroit

9:30 a.m.—ESSENTIAL TECHNIQUES

Making Your Workshop Productive—Russell J. Kleis, Head, Office of Program Development, Continuing Education Service, Michigan State University, East Lansing

Evaluating Your Workshop—Robert A. Luke, Assistant Director, Division of Adult Education Service, National Education Association, Washington, D.C.

9:30 a.m.—CONFERENCE OF DIRECTORS AND STAFFS OF APPROVED DIETETIC INTERNSHIPS (limited to those in this area)

Dietetics as Seen by the College Student—Stuart B. Foster, Ph.D., Head, Department of Chemistry, State Teachers College, Framingham, Massachusetts

A.D.A. Educational Director's Report—Wilma F. Robinson

General Discussion

11:15 a.m.—INTERDEPARTMENTAL RELATIONSHIPS

Panel: John W. Rankin, Director, Milwaukee County Institutions and Departments, Milwaukee, *Moderator*

11:15 a.m.—FOOD TECHNOLOGY
Is Toxicology Enough in a Food Protection Program?—Olaf Mickelsen, Ph.D., Assistant Chief, Laboratory of Nutrition Endocrinology, Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda
Antibiotics and Meat—Vern R. Cahill, Ph.D., Associate Professor, Animal Science Department, The Ohio State University, Columbus

1:30 p.m.—CONFERENCE OF FACULTIES OF COLLEGE AND UNIVERSITY HOME ECONOMICS DEPARTMENTS AND APPROVED DIETETIC INTERNSHIPS
Educational Philosophy in Home Economics Today—Doretta Schlaphoff Hoffman, Ph.D., Dean, School of Home Economics, Kansas State College, Manhattan
Educational Trends in the Dietetic Internship—Mary C. Zahasky, Director, Department of Dietetics, The University of Oklahoma School of Medicine and University Hospitals, Oklahoma City
Revised A.D.A. Academic Requirements—Mary Ellen Johnson, Educational Director, Colorado State Hospital, Pueblo
New Academic Requirements—Anna M. Light, Ph.D., Chairman, Department of Home Economics, University of New Hampshire, Durham, *Coordinator*
Olga Brucher, Dean, College of Home Economics, University of Rhode Island, Kingston
Louise Hatch, Director, Department of Dietetics, Massachusetts General Hospital, Boston
Helen S. Mitchell, Ph.D., Dean, School of Home Economics, University of Massachusetts, Amherst
Madge L. Myers, Peter Bent Brigham Hospital, Boston

1:30 p.m.—CONFERENCES AND DISCUSSION PERIODS
Planning and Conducting a Workshop—Katherine H. Fisher, Ph.D., Associate Professor, Department of Foods and Nutrition, The Pennsylvania State University, University Park
What Are We Doing in Civil Defense?—Dorothy L. Bovee, Food and Nutrition Consultant, American National Red Cross, Washington, D. C.
Inplant Feeding—Sina F. Fowler, Dietitian, Western Electric Company, Inc., Chicago
Nutrition and the Teen-Ager—Anna dePlanter Bowes Director, Bureau of Nutrition, Pennsylvania Department of Health, Harrisburg, *and* Constance Hilton, Director of Dietetics, The Lutheran Hospital, Moline, Illinois
Helps for the Clinic Dietitian, Including Teaching Materials in Foreign Languages—Erna Mae Behrend, Nutritionist, Medical College of Virginia, Richmond, *and* Edwina L. McDonald, Clinic Dietitian, VA Regional Office, Pittsburgh
School Lunch—Elizabeth Goodman, Director of School Lunchrooms, Minneapolis Public Schools, Minneapolis
The Dietitian's Role in a Psychiatric Setting—Margaret M. Hinkle, Chief Dietitian, *and* Ralph M. Patterson, M.D., Medical Director, Columbus Receiving Hospital and State Institute of Psychiatry, Columbus

2:30 p.m.–5:30 p.m.—VISIT EXHIBITS

8:00 p.m.—NUTRITION PROGRESSES, Hotel Schroeder
Nutritional Deficiency Diseases Today—William J. Darby, M.D., Ph.D., Head, Department of Biochemistry, Division of Nutrition, Vanderbilt University School of Medicine, Nashville
New Findings in Nutrition Research—Charles Glen King, Ph.D., D.Sc., Executive Director, The Nutrition Foundation, Inc.; and Professor of Chemistry, Columbia University, New York City
Further Combating Food Misinformation—Ruth M. Leverton. Ph.D., Assistant Director, Agricultural Experiment Station in Charge of Home Economics Research, Oklahoma A. & M. College, Stillwater

Thursday, October 11

8:00 a.m.—CONFERENCES AND DISCUSSION PERIODS (limited attendance), Hotel Schroeder
Weight Control Programs—Julia A. Barney, Department of Dietetics, Baylor University Hospital, Dallas, *and* Ethel Marth, Director, Food and Nutrition Services, Rochester-Monroe County Chapter, American Red Cross, Rochester, New York
Revisions in *Handbook of Diet Therapy*—Lorraine G. Weng, Nutritionist, National Dairy Council, Chicago
Work Simplification—Mary Lipscomb, Maj., AMSC, Food Service Division, Brooke Army Hospital, Fort Sam Houston, Texas
Cost and Nutritional Accounting—Frances P. Kelley, Chief, Dietetic Service, VA Center, Wood, Wisconsin

8:00 a.m.–9:00 a.m.—REGISTRATION OF DELEGATES TO THE HOUSE OF DELEGATES, Milwaukee Auditorium

9:00 a.m.—MEETING OF THE HOUSE OF DELEGATES, Milwaukee Auditorium

9:00 a.m.–4:30 p.m.—REGISTRATION, Milwaukee Auditorium

10:00 a.m.–5:30 p.m.—EXHIBITS, Milwaukee Auditorium

9:30 a.m.—DIET THERAPY—1956
Dietary Factors in Carcinogenesis—W. C. Hueper, M.D., Chief, Environmental Cancer Section, National Cancer Institute, National Institutes of Health, Bethesda
Dietary Control of Dental Caries—Paul H. Phillips, Ph.D., *and* F. Taketa, Department of Biochemistry, University of Wisconsin, Madison

9:30 a.m.—KEYS TO SUCCESS
The Need of a Budget—John M. Stagl, Assistant D rector, Passavent Hospital, Chicago
Cost Control and Quality Food—Katherine Hart, Department of Institution Administration, Michigan State University, East Lansing
Making Food Worth Talking About—Helen A. Buik, Manager of Restaurants, T he T. Eaton Co., Ltd., Toronto, Canada

9:30 a.m.—THE SENIOR CITIZEN
Medical Aspects of Aging—Frederick C. Swartz, M.D., Lansing
Food Selection and Well-Being of Aging Women—Anna Louise Kelley, Ph.D., Associate Professor, Department of Foods and Nutrition, Michigan State University, East Lansing
Proper Use of Modified Diets—Arnold Wagner, M.D., The Mather Home, Evanston, Illinois

11:30 a.m.—EXTENDING OUR SERVICES
A Hospital Food Service Supervisors' Program—S. Margaret Gillam, Course Coordinator, Department of Foods and Nutrition, Michigan State University, East Lansing
Cleveland's Program—Elizabeth Perry, Assistant Superintendent and Chief Dietitian, City Hospital of Cleveland, Cleveland
Food Service for Our Ten Hospitals—Ann Hains, Director of Nutrition and Dietary Services, Harlan Memorial Hospital, Harlan, Kentucky

12:30 p.m.—HISTORY OF NUTRITION AND DIETETICS LUNCHEON—E. Neige Todhunter, Ph.D., *Chairman*, Milwaukee Auditorium

1:45 p.m.—HISTORY OF NUTRITION AND DIETETICS
The History of Nutrition Education Programs for Children in the U. S.—Lydia J. Roberts Essay Award Recipient
In the Days When Vitamins Were New—Helen T. Parsons, Ph.D., Professor Emeritus, Department of Foods and Nutrition, University of Wisconsin, Madison

1:30 p.m.—DEGENERATIVE DISEASES
Low-Fat Diets in Cardiac Diseases—Peter T. Kuo,

M.D., University of Pennsylvania Hospital, Philadelphia

Comparative Cholesterol, Protein, and Fat Consumption in the U. S. from 1890 to the Present—Mary B. McCann, Department of Nutrition, Harvard School of Public Health, Boston

Dietary Constituents and Atherosclerosis—Theodore B. Van Itallie, M.D., Department of Nutrition, Harvard School of Public Health, Boston

1:30 p.m.—A GOAL FOR THE FUTURE

Research Experience as a Part of Graduate Education—Charles F. Code, M.D., Mayo Clinic, Rochester

Developments in Continuing Education—Margaret A. Wilson, Department of Dietetics, The Ohio State University Hospital, Columbus

3:30 p.m.—STATE OFFICERS' MEETING: Informal discussion groups on pertinent subjects

3:30 p.m.—INSTITUTIONAL FOOD SERVICE

Food Yields and Losses—Elsie H. Dawson, Head, Food Quality and Use Section, Human Nutrition Research Branch, U.S.D.A., Washington, D. C.

Factors in College Residence Hall Food Service—Doris Hittle, Administrative Dietitian and Instructor of Institution Management, Iowa State College, Ames

3:30 p.m.—RECENT FINDINGS IN PROTEIN NUTRITION

Protein Requirements of Children–Theoretical Considerations—D. Mark Hegsted, Ph.D., Department of Nutrition, Harvard School of Public Health, Boston

Amino Acid Requirements and Implications in Dietary Planning—May S. Reynolds, Ph.D., Professor, Department of Foods and Nutrition, University of Wisconsin, Madison

Nutrition in Liver Disease—Gordon M. Mindrum, M.D., Associate Professor, School of Medicine, University of Cincinnati, Cincinnati

7:00 p.m.—ANNUAL BANQUET—Winifred H. Erickson, *Chairman*, Hotel Schroeder

Invocation—Andrew G. Finnie, D.D., Immanuel Presbyterian Church, Milwaukee

Presentation of the Lydia J. Roberts Essay Award for 1956

Presentation of the Mary Swartz Rose Fellowship for 1956

Presentation of the Marjorie Hulsizer Copher Award for 1956

Friday, October 12

(All Friday meetings will be at the Hotel Schroeder)

8:30 a.m.—CONFERENCES AND DISCUSSION PERIODS (limited attendance)

Diabetes and Sodium-Restricted Materials—*Panel*: Doris Johnson, Ph.D., Director of Dietetics, Grace-New Haven Community Hospital, New Haven; Beth Heap, Public Health Service, Department of Health, Education and Welfare, Washington, D. C.; *and* Corinne H. Robinson, Head, Department of Food and Nutrition, Drexel Institute of Technology, Philadelphia

Cycle Menus for Hospitals—E. Virginia Pinney, St. Luke's Hospital, Chicago

What Can We Do About Food Misinformation?—Jessie C. Obert, Ph.D., Head, Public Health Nutritionist, Los Angeles County Health Department, Los Angeles

The Continuing Education Program—Where Do We Go from Here?—Margaret A. Wilson, Department of Dietetics, The Ohio State University Hospital, Columbus

Courses for Food Service Supervisors (those sponsoring such programs are urged to attend)

9:30 a.m.–2:00 p.m.—REGISTRATION

9:45 a.m.—PRACTICAL TEACHING

Teaching vs. Telling—Paul Bergevin, Director, Community Services in Adult Education, affiliated with Indiana University, Bloomington, and Purdue University, Lafayette

Effective Teaching (including visual aid demonstration)—John A. Ey, Jr., Capt., MSC, Personnel Division, Office of the Surgeon General, Department of the Army, Washington, D. C.

9:45 a.m.—TODAY'S MODIFIED DIETS

Understanding and Support of the Patient—Knight Aldrich, M.D., Department of Psychiatry, University of Chicago

Rationale of the Bland Diet—Seymour Grey, M.D., Peter Bent Brigham Hospital, Boston

Chronic Sodium Chloride Toxicity and the Protective Effects of Potassium Chloride—George R. Meneely, M.D., Associate Professor, Vanderbilt University School of Medicine, Nashville

9:45 a.m.—ADMINISTRATION IN THE FUTURE

Labor Hours in the Department of Dietetics—Eleanor F. Halter, Department of Foods and Nutrition, University of Wisconsin, Madison

Better Management–Control of Direct Expenses of Food Production—Grace L. Stumpf, Director, Department of Dietetics, The Ohio State University Hospital, Columbus *and* Beatrice Donaldson, Ph.D., Head, Institution Management Laboratory, Department of Foods and Nutrition, University of Wisconsin, Madison

A Forecast of Food Service Management—Fern W. Gleiser, Professor, School of Business, University of Chicago, Chicago

1:00 p.m.—MEETING OF STATE COMMUNITY NUTRITION CHAIRMEN—Marjorie M. Morrison

1:00 p.m.—MEETING OF STATE DIET THERAPY CHAIRMEN—Elmira E. Blecha

1:00 p.m.—MEETING OF STATE EDUCATION CHAIRMEN—Martha N. Lewis

1:00 p.m.—MEETING OF STATE FOOD ADMINISTRATION CHAIRMEN—Beatrice Donaldson, Ph.D.

1:00 p.m.—CONFERENCES AND DISCUSSION PERIODS

Food Service in Mental Hospitals—Arline M. Wilson, Dietary Consultant, Indiana Department of Health, Indianapolis

College Food Service—Helen Demsey, Director of Institution Administration, Mills College, Oakland

2:15 p.m.—WEIGHT CONTROL

Evaluation of Nutritional Status in Terms of Body Measurements—Josef Brozek, Ph.D., Associate Professor, Laboratory of Physiological Hygiene, University of Minnesota, Minneapolis

Obesity and Heart Disease—Charles F. Wilkinson, Jr., M.D., Chairman, Department of Medicine, New York University Post-Graduate Medical School, New York City

Obesity among Middle Aged Men and Women—Robert E. Olson, M.D., Ph.D., Head, Department of Biochemistry and Nutrition, Graduate School of Public Health, University of Pittsburgh, Pittsburgh

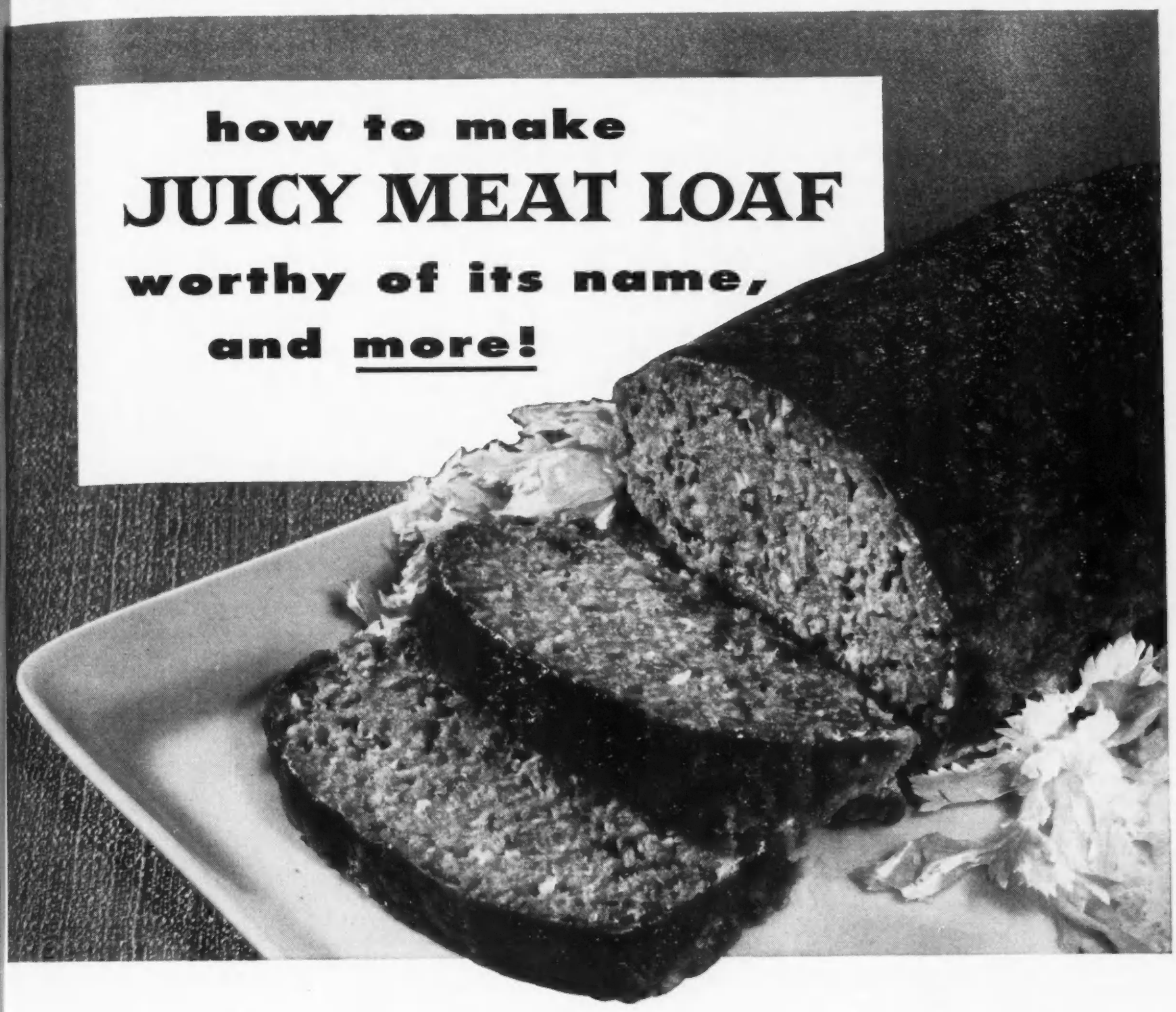
2:15 p.m.—PERSONNEL-DIETITIAN RELATIONSHIPS

Personnel Management Today and Tomorrow—Russell L. Moberly, Ph.D., Director, The Management Center, College of Business Administration, Marquette University, Milwaukee

Visual Materials for Training Personnel in Work Simplification—Marjorie M. McKinley, Ph.D., Assistant Professor, Department of Institution Management, Iowa State College, Ames

Constructive Labor Relations—Harold W. Davey, Ph.D., Professor of Economics, Iowa State College, Ames

4:00 p.m.—FIELD TRIPS



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JUICY MEAT LOAF

1 No. 10 can Tomatoes
12 lbs. ground lean Beef
¾ lb. uncooked rolled Oats
1¼ lbs. (3 cups) finely cut Onion
⅓ cup Salt
1 lb. 10 oz. *Instant* Pet (in dry form)
1½ teasp. Pepper
1 teasp. Thyme (can omit)
1 teasp. Rosemary (can omit)

Drain tomatoes and put into large mixer bowl. Add rest of ingredients and mix with an electric mixer at lowest speed. Turn out into a greased steam table pan measuring about 12 x 20 x 2½ inches. Pat out to fill pan. With spatula mark into 3 portions, lengthwise. With wet hands, shape each portion into a loaf measuring about 20 x 4 x 3 inches. Bake in 350 oven (moderate) about 1¾ to 2 hours, or until brown. Cut each loaf into 19 one-inch slices. Makes three 6-lb. loaves, or 57 servings.

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Waring Products Corporation
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Annual Meeting Glimmers

Milwaukee—October 9-12, 1956

ALL YOURS

Those of you who attend the Annual Meeting will have the opportunity of hearing the presentations of carefully selected persons representing twenty of the country's colleges and universities and other experts.

These speakers are specialists who have earned recognition in their respective fields. They have been chosen from the long list of persons recommended by A.D.A. members and submitted to the Program Committee. They have been invited to appear before you because they are qualified to bring you information which is based on concentrated study, original research, or years of specialized experience.

COME EARLY—STAY ALL WEEK

Members of the Wisconsin Dietetic Association warmly urge you to come to Milwaukee in time for the Monday evening gathering. It will be informal and spontaneous—hence its name, Gemütlichkeit—and colored by autumnal tradition in its refreshments.

An atmosphere of festivity will be created by Bob Hert's six-piece orchestra. The time—7 until 10 p.m.

We hope you are planning to attend the Annual Banquet on Thursday evening. If you have not attended this function in the past, you will discover that it is a most impressive occasion. You may see and meet the members of the Coordinating Cabinet and other leaders in the Association, the past presidents, and this year's award winners.

TO SEE AND HEAR

It may interest you to know that as of the last week in August, 262 booths have been assigned to 167 of the country's leading food and food service equipment companies and a limited number of allied organizations.

Another fragment of pertinent information is that A.D.A. exhibitors are selected with care, with the result that those who display their products represent companies which are dependable and ethical.

A short walk through the attractive, tastefully designed exhibition area will reveal to you that only products which have a direct bearing on dietetics are shown. This limitation qualifies the A.D.A. event as unique. You can easily recall the heterogeneous displays you have seen at other conventions.

Your Association keenly appreciates the consideration of the exhibitors in asking their key people to be present to discuss services and products with the membership. Presidents, sales managers, research scientists, home economicsts, and other highly regarded persons "who know whereof they speak" will give you authoritative information.

A cordial invitation to visit the exhibit of shortenings and salad oil has been issued by *The Wesson Oil & Snowdrift Sales Company*. Two practical quantity formula books are being offered.

A "plug-in" automatic coffee maker, which needs no special wiring, will be demonstrated at the *Vaculator* exhibit.

Victory Metal Manufacturing Corporation will exhibit its all-metal, self-contained refrigerators and freezers featuring exclusive interiors that can be change in minutes without tools.

The major item of interest at *Blakeslee* will be the rackless, conveyor-type dishwasher, which has an all-nylon conveyor belt.

Members will have opportunity to enjoy a quick energy pick-up at the *Wilson & Co.* booth—a cup of hot, nourishing B-V.

Shampaine Electric Company will feature a new "20 Meal" version of the "Mealcart" for central tray service of hot and chilled foods.

Books on nutrition and related fields will be presented for examination when you stop to see the people from *W. B. Saunders Company*.

McCall Refrigerator Corporation is bringing its Mohawk model, which has two roller pull-out shelves and two adjustable screens.

H. J. Heinz Co., whose name immediately brings "the 57 Varieties" to mind, invites you to pause and become better acquainted with its famous products.

A mercury-heated hospital tray cart with which one person can load food service for thirty patients in less than 5 min. and serve it piping hot in less than 5 min. more, is the presentation of *Steele-Harrison Mfg. Co.*

Food service and hospital consultants are being sent by *S. Blickman, Inc.* to staff the exhibit where the hot and cold central service type food conveyor will be displayed.

You will be able to see and taste the sodium-free salt substitute Co-Salt at the *U. S. Vitamin Corporation's* exhibit. Samples and literature will be given out.

Many practical allergy, weight reducing, and infant feeding directions will be available from *Ralston Purina*.

Telephone service and a message center for the convenience of members will be installed through the courtesy of the *Campbell Soup Company*. New quantity recipe cards, including Campbell's Chicken and Turkey, may be obtained at the booth.

A member of the California prune industry, representing all growers and packers, is looking forward to meeting you at the *California Prune Advisory Board* exhibit. Two new books, "The Nutritive Value of California Prunes," and a recipe book will be yours for the asking.

For those of you who haven't tried it and for those who are just thirsty, the *Pet Milk* people will have samples of Instant Nonfat Milk.

Chosen by *Institutional Feeding and Housing Magazine* as the product of the month in April, the Salvajector will be the highlighted item of *The Salvajor Co.*

Along with the Cloverlane Melamine dinnerware, the Dinnerware Division of *Chicago Molded Products Corporation* will feature a new plastic tumbler which is light, easy to handle and stack, as well as decorative.

Both the food mixer and peeler manufactured by *Universal Industries* will be displayed for your inspection.

Funny clowns and animals have been added to the "Taste Tempter" pick decorations carried by *Edward Don & Company*.

You will be able to discuss problems concerning meat and meat cuts with the *Becker Meat* representatives.

The revised 11th edition of Hutchinson's *Food and the Principles of Dietetics* by V. H. Mottram and George Graham, M.D., will be available at the *Williams & Wilkins' Company's* book exhibit.

A new film entitled "Foods, Fats and Fryers," was recently released by *Armour & Company*. Brochures giving full details will be available.

The Chine-Cote all-purpose cup, which has a plastic lining, imparting a china-like feel, will be shown along with the Lily matched, paper dining service for hospitals at the *Lily-Tulip Cup Corporation* display.

S. Gumpert Company wishes to introduce you to its Low Sodium Chicken Soup Base and Beef Soup Base.

The "Twelve-Twenty" cafeteria pan steamer, in which one pan can be removed without disturbing the other, will be the number one item from *the Cleveland Range Company*.

To discuss stainless steel service and steam table utensils with you, representatives from Wisconsin's *Polar Ware Company* will be on hand.

Two lines of Melmac dinnerware, the Boontonware Deluxe in a classic round shape and Boontonware Belle, more modern and lighter weight, both of which come in nine handsome colors, will be shown by *Boonton Molding Company*.

Favorable samples of old-fashioned hand-kneaded whole wheat, white, and corn and molasses breads will be offered by *Pepperidge Farm*.

J. B. Lippincott will bring a variety of books and journals for your consideration.

The *METERFLO* Milk Can Cart, designed to load all models of METERFLO bulk milk dispensers will be on display.

Adolph's Sugar Substitute and Salt Substitute shaker packets will be shown, along with color slides.

Several models of *Koch* refrigerators will be installed for your inspection.

You will be able to learn about MULL-SOY, the hypo-allergenic soybean formula, from the *Borden*.

IMPORTANT . . . MAIL YOUR APPLICATION PROMPTLY

Application for Housing Accommodations

THE AMERICAN DIETETIC ASSOCIATION

Milwaukee, Wisc. • October 9–12, 1956

For your convenience in making hotel reservations for the coming meeting of THE AMERICAN DIETETIC ASSOCIATION October 9–12, 1956 in Milwaukee, hotels and their rates are listed below. Use the form at the bottom of this page, indicating your first, second and third choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. All reservations must be cleared through the Housing Bureau. ALL REQUESTS FOR RESERVATIONS MUST GIVE DEFINITE DATE AND HOUR OF ARRIVAL AS WELL AS DEFINITE DATE AND APPROXIMATE HOUR OF DEPARTURE, ALSO NAMES AND ADDRESSES OF ALL PERSONS WHO WILL OCCUPY RESERVATIONS REQUESTED *MUST* BE INCLUDED.

Hotel	For one person	For two persons	
		Double	Twin Beds
AMBASSADOR	$5.00–$7.00	$8.00–10.00	$8.00–10.00
ASTOR	5.50– 7.50	8.00–10.50	9.50–12.00
KNICKERBOCKER	4.40 & up	6.60 & up	8.25 & up
MEDFORD	4.50– 5.25	6.25– 7.00	8.50–10.00
PFISTER	5.00– 9.00	7.50–10.00	8.00–12.00
PLANKINTON HOUSE	5.50–10.00	8.00–11.00	9.00–15.00
SCHROEDER	5.00– 8.00	8.00–12.00	10.00–16.00
WISCONSIN	4.50– 8.00	6.75–10.00	10.00–11.50

In the event that the hotel room rate structure is changed prior to the above convention these rates will be changed accordingly.

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO: September 14, 1956

Miss Betty B. Wright
Room 517, 611 N. Broadway
Milwaukee 2, Wisc.

Please reserve the following accommodations for: THE AMERICAN DIETETIC ASSOCIATION Convention in Milwaukee, Wisc., October 9–12, 1956

Single Room_____ Double Bedded Room_____ Twin Bedded Room_____
Other Type of Room_____
Rate: From $_____ to $_____

First Choice Hotel_____
Second Choice Hotel_____
Third Choice Hotel_____

Arriving at Hotel (date)_____ hour_____ A. M._____ P. M. Leaving (date)_____ hour_____ A. M._____ P. M.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of *both* persons for *each* double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

_____
_____
_____
_____

(Individual Requesting Reservations)

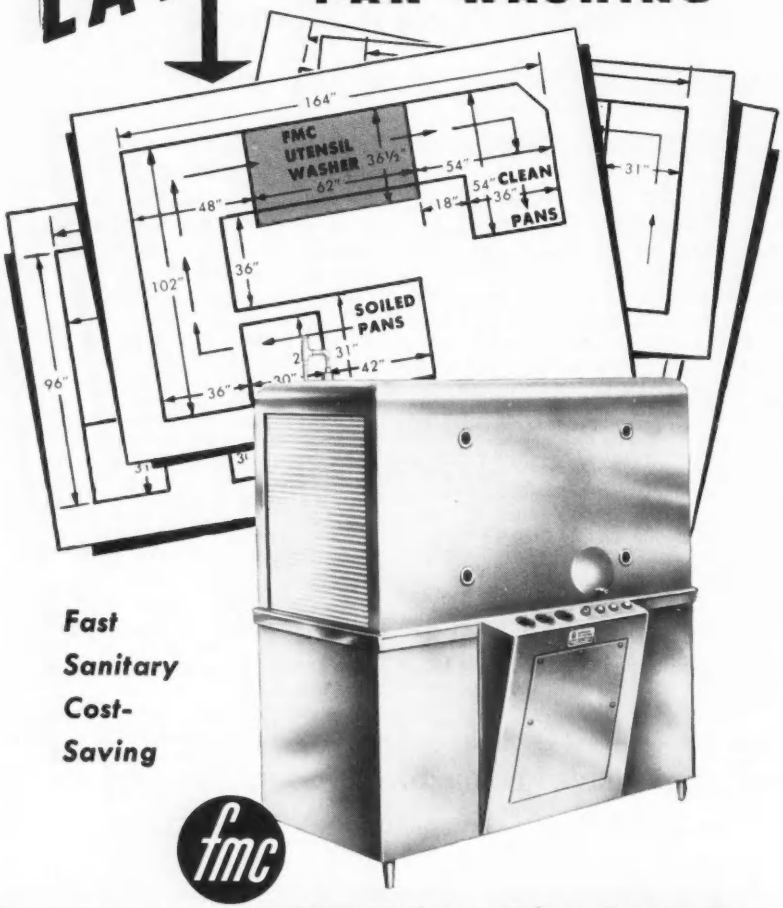
Name _____

Address_____

City and State_____

If the hotels of your choice are unable to accept your reservation the Hotels Convention Reservation Bureau will make as good a reservation as possible elsewhere provided all hotel rooms available have not already been taken.

LAYOUT For Modern POT AND PAN WASHING



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Saving

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JET Disposer

An amazing new principle of design. Easily pulverizes the usual kitchen wastes—even bones, corn cobs, rags and string.

UTENSIL WASHER

Commercial kitchens now have the answer to sanitary greaselessly clean pots and pans—THE FMC UTENSIL WASHER! Whether pie pans or garbage cans, this kitchen cost-saver does the job with high pressure, high velocity jets of hot water ALONE.

Single and double compartment washers are available to fit any kitchen operation serving 500 to 10,000 or more meals per day. Our engineers are ready to help you prepare specific layouts. No obligation. Write today for descriptive Bulletin "It's like Magic."

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Designed for fast draining and drying is the contoured, pedestal-type footed base dinnerware of the Arrowhead Division of *International Molded Plastics*.

A three-compartment, direct-connected steam cooker, in which all piping and controls are hidden, will be presented by the *Market Forge Co.*

Cheerful servers in a variety of bright colors will be featured by *Dispensers, Inc.*, producers of Dripcut Vitrified China Servers.

Peaches and fruit cocktail will be served to visitors at the *Cling Peach Advisory Board's* exhibit.

Chicago Dietetic Supply House will bring its new CELLU Low Sodium Non-Fat Dry Milk Solids.

Portion control servings of mouth-watering dessert toppings, salad dressings, and mustard will be displayed with fruit salad, pickles, and Italian dressings at the *Kraft* exhibit.

Similiac representatives will come to discuss the physiologic role of Similac Powder and Similac Liquid in growth, development, and in clinical use. They will be at the *Ross Laboratories* (formerly M & R Laboratories) booth.

You are invited to visit the *Rath Packing Company's* booth to see a demonstration of breaded Chop-ettes. These exact, portion-controlled meats are produced from specially selected boneless cuts, trimmed free of all extraneous tissue.

If you would be heralded as your community's incomparable coffee brewer, take advantage of the scientific knowledge available to you. Visit the booth of *Coffee Brewing Institute, Inc.* Learn from the experts, and take home literature on home and institutional brewing methods.

The *Lemon Products Advisory Board* will again feature frozen lemonade and "Tasty Freezer Fare" booklets.

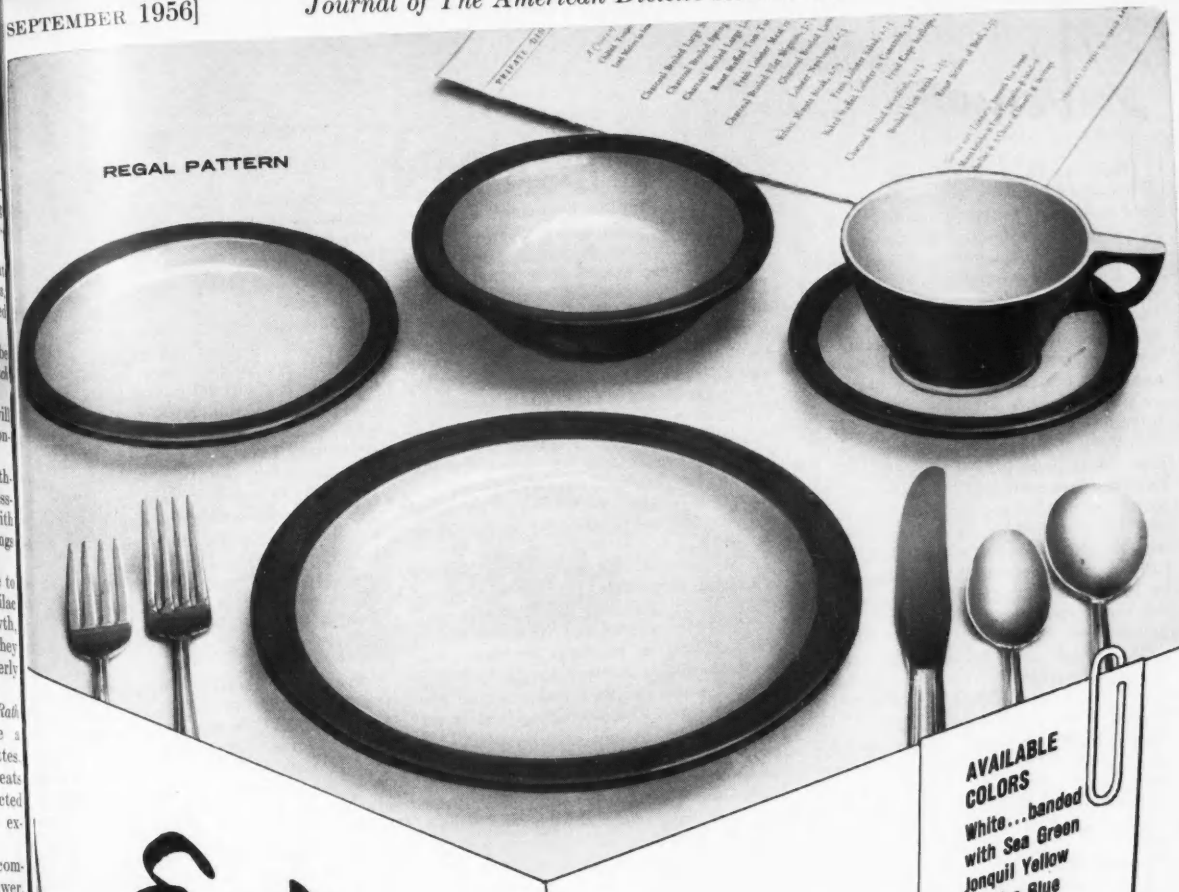
The *American Machine & Foundry Company* will be proud to show you the latest addition to its Lowerator Dispenser Line, the AMF Lowerator Mobile Refrigerated Milk Dispenser. It provides automatic dispensing at convenient counter level of up to 320 half-pint milk cartons or bottles. It can be easily wheeled on all-swivel casters into counter openings or adjacent to serving lines.

Be sure to stop by the *Lawry's* booth to taste-test the new Lawry's "Seasoned" Salt Substitute. An introductory package with a free pocket shaker will be distributed.

The *American Dry Milk Institute, Inc.* will point out the advantages of using nonfat dry milk by institutions—food preparation, baking, and beverages.

It will be worth your while to see the *Veterans Administration's* Dietetic Service Exhibit, the theme of which is "Executive Ability + Scientific Knowlege = A Progressive Dietitian." It stresses the dietitian's responsibilities as business manager and therapist.

Cheese samples and dairy products will come to you, courtesy of the *Wisconsin Department of Agriculture.*



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Now, for the first time Economy Dinnerware with the Luxury Look

"BANDED *COLOR-ON-COLOR"

Molded Melamine Dinnerware

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AVAILABLE COLORS

White...banded with Sea Green
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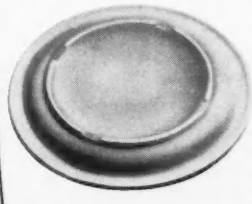
The newest is always from TEXAS WARE!

"Banded Color-on-Color" combines the economy of break-resistant Texas Ware with appealing colors that make meals more pleasing to your guests. For the first time... colors are bonded together inseparably. Interiors in tan or white... solid colors on rims and other surfaces.



"Regal Pattern" has the most sanitary base available... the new Vented Contour Base that assures easier washing, better drainage and faster air drying.

News Notes

New A. D. A. Honorary Member. When the Executive Board of the A.D.A. met in June, it voted to make Dr. Stuart B. Foster, Professor, Department of Chemistry, Massachusetts State Teachers College, Framingham, an honorary member. As Professor and Head of the Department of Chemistry, Dr. Foster has been individually responsible for directing over four hundred girls into approved dietetic internships and membership in A.D.A. Dr. Foster's contributions have been primarily in the area of education and his time and efforts for the past thirty-five years have been spent in teaching and guiding food and nutrition majors and in supporting the standards and ideals of The American Dietetic Association. Nomination of Dr. Foster for honorary membership was initiated by the Massachusetts Dietetic Association and sponsored by almost thirty members of the Association.

Dr. Foster thus becomes the eighth person to be elected an honorary member of the Association. Others are: Dr. Mary Swartz Rose (deceased); Dr. E. V. McCollum; Dr. James S. McLester (deceased); Dr. Malcolm MacEachern (deceased); Dr. A. L. Parsons; Dr. H. C. Sherman (deceased); and Dr. Martha Eliot.

Conference on Aging. The 9th Annual Conference on Aging was held July 9 to 11 at the University of Michigan, Ann Arbor, with the over-all theme being "Health for the Aging." Maxine Armstrong, University of Michigan School of Nursing, served as A.D.A. representative at this meeting, and has made the following report: "The program of the Conference was divided into a number of different types of sessions: general, workshop, demonstration, seminar, and clinic. The workshop on 'Nutrition and Health of the Aging' was, of course, of greatest concern to dietitians and nutritionists attending the Conference. Four different workshop sessions were held, at which information on various aspects of nutrition in relation to the health of our aging population was presented.

"Dr. Edward L. Bortz, Chief, Medical Service, Lankenau Hospital, Philadelphia, spoke of the physiologic changes of aging and their nutritional implications. He placed good nutrition at the beginning of a ten-point program for successful aging and stated that the aging processes may be accelerated or retarded by the quality and quantity of the diet. He also stressed the need for adequate but not super nutrition. There is no need for excessive intake of vitamins.

"Dr. Wilma D. Brewer, Department of Foods and Nutrition, Michigan State University, East Lansing, presented data from a nine-year study of the nutritional status of healthy, active, aging women. While caloric intakes decreased with aging, the decrease was not enough to compensate for decreased activity. Women in their sixties averaged only 1630 calories daily, yet 68 per cent were overweight. These women were also in negative nitrogen, calcium, and phosphorus balance on their self-selected diets. Dr. Brewer concluded that while it may be necessary to restrict calories during aging to prevent excessive body weight, the proportion of other essential nutrients to calories should be increased. This may mean changes in food habits. She also suggested that an aging person should be encouraged to maintain a moderate degree of activity so that calories will not need to be decreased so sharply.

"Alice Smith and Myrtle Van Horne, Michigan Department of Health, Lansing, made valuable suggestions for meeting the nutritional needs of older people, whether they are in their own homes or in an institution. Mrs. Smith pointed out that we need a guide for planning menus for the aging just as we do for younger people, and illustrated by means of a bar chart how foods popular in Michigan might be selected from the Basic 7 to meet the recommended allowances for older persons. Miss Van Horne discussed feeding of older people in nursing homes, emphasizing that food has nutritional value only when it is eaten. The problem of changing food habits, if necessary, is to have the older person *like* the foods that meet his nutritional needs. She suggested that nursing home operators evaluate meals they are serving by asking the following questions:

"'Do my meals meet the food needs of the residents?
"'Do my meals look "good enough to eat"?
"'Does the food taste good?
" Is the food prepared to retain its food value?' "

Sanitarians Meeting. The week of July 23 to 26 saw the 29th Annual Educational Conference and Sanitation Products Exposition of the National Association of Sanitarians in Chicago. Louise Wilkonson, Director, Dietary Department, Michael Reese Hospital, Chicago, attended as A.D.A. representative.

The keynote address of the meeting was presented by Malcolm C. Hope, Chief, General Engineering Program, Division of Sanitary Engineering, U.S. Public Health Service. Mr. Hope emphasized that even though, in the U.S., water, milk, and food is generally considered safe for human consumption, this does not mean that there is little left to do. The Public Health Service has such current projects as: a new manual on health practices, an air pollution control program, study of radiologic health, and a water pollution control program.

One meeting was concerned with the sanitary aspects of vending machines, which are at present branching into the food field. The vending machine is potentially a sanitary way of merchandizing food, as it sells sanitary packages. The industry has been aware of sanitation problems from the start, and the National Automatic Merchandizing Association has formed a Sanitation Commission which has been working on a sanitary code which it hopes to publish in January 1957. This code will establish procedures for operating, servicing, and inspecting of vending machines.

Other topics covered in other sessions included processing and marketing of frozen foods, the Preventive Medicine Inspection Service of the U.S. Air Force, the dairy industry, and atomic energy in sanitation and radiation sterilization of foods.

Statistics Awards. Again this year, the University of Chicago is offering post-doctoral awards for study in statistics for persons whose primary field is not statistics but one of the physical, biologic, or social sciences to which statistics can be applied. The awards range from $3600 to $5000 on the basis of an eleven-month residence. Further information may be obtained from the Committee on Statistics, Eckhart Hall, University of Chicago, Chicago 27, Illinois.

New Booklets and Brochures. The *California Department of Social Welfare* has compiled and released *Favorite Foods in Institutions for Aged Persons in California*, which is a collection of recipes contributed by homes for the aged in the state. The recipes have all been priced (according to today's retail prices) for total cost and cost per serving. Caloric value per serving and protein content have also been calculated to assist in menu planning. The recipes are organized according to the following headings: beverages—soups; breads—sandwiches; desserts, sauces relishes; main dishes, with principle ingredients being cheese, dried beans, egg, fish, meat, and poultry; and salads, salad dressings, and vegetables. The publication is prepared in loose-leaf form in the hope that new recipes will be contributed and made available later. Price of this compilation is 75 cents a copy. Orders should be sent to: California Department of Social Welfare, 722 Capitol Avenue, Sacramento 14.

A reprint of the report, "Vitamin, Mineral, and Proximate Composition of Frozen Fruits, Juices, and Vegetables" by Marie Burger, L. W. Hein, L. J. Teply, P. H. Derse, and C. H. Krieger of the Wisconsin Alumni Research Foundation is now available for 10 cents a copy (minimum order $1) from *National Association of Frozen Food Packers*, 1415 K Street, N.W., Washington 5, D. C. Originally published in the *Journal of*

delightful dietetic taste treats

can be prepared in a jiffy

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original liquefier-blender

FITS CANNING JARS . . . food can be prepared and stored in same container.

OPENS BOTH ENDS . . . for easier cleaning and emptying.

High speed, knife-like processing blades prepare foods for easy assimilation by liquefying, pureeing, grinding and blending. The OSTERIZER makes possible the serving of foods rich in their natural, nutritive values. It *blends* foods in endless combinations to produce delightful taste treats that can be achieved in no other way. With the OSTERIZER foods of the general diet can be used to meet the needs of the therapeutic diets. Yes, for improved dietary standards, improvements in palatability, greater variety and speed in the preparation of diets, it's the OSTERIZER by OSTER, the original liquefier-blender.

and here's your newest aid to special diet problems

SPECIAL ICE CRUSHER HEAD Utilizes the meat grinder power unit. Quick and easy to attach. Grinds nine chip sizes of ice to meet every food and drink requirement . . . fast as you can feed it.

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ELECTRIC MEAT GRINDER

You'll save countless hours of grinding time when you replace old hand grinders with the new OSTER *Electric* Meat Grinder. Grinds all foods quickly and easily, coarse or fine . . . meats, nuts (even hard almonds) vegetables, dried breads, fruits, etc. Self sharpening, stainless steel cutting blades actually chop foods like a butcher's chopper . . . no tearing of tough meats, no mashing of soft foods. Use it wherever there's a 110 volt outlet. No clamping necessary and no vibration . . . just smooth, efficient power at the flick of a switch.

Created by John Oster MANUFACTURING CO., Dept. L, 5039 N. Lydell Ave., Milwaukee 17, Wisconsin

Agricultural and Food Chemistry in May 1956, this report presents figures for 8 vitamins, 6 minerals, and proximate composition for 14 frozen fruits, 7 frozen juices, and 30 frozen vegetables.

Number 10 of the *National Restaurant Association's* highly readable and helpful Supervisory Review Series has been released. Titled "Silence Gives Consent," it deals with the problem of the supervisor's continuing responsibility for maintaining standards and techniques for achieving employee compliance with standards. Copies are available from the NRA, 8 South Michigan Avenue, Chicago 3, for 15 cents each.

A new booklet from the *Georgia Agricultural Experiment Stations*, Bull. N.S. 23, is titled "Space Requirements and Designs for Baking Centers." It is concerned with spacial planning for household baking and includes findings on: supplies and utensils; counter work space needed; storage requirements and arrangements. An appendix includes a number of interesting tables, including reports on the frequency with which twenty-eight different foods are served in southern homes and on preparation time needed for biscuits and potato salad at three different sized work surfaces. Copies may be obtained from the Georgia Agricultural Experiment Stations, Athens.

Interns Graduate. At *Ancker Hospital*, St. Paul, Minnesota, seven dietetic interns have completed their year's work. They are:

Marie Therese Gauer, Mundelein College, Chicago
Frances Jean Lohman, North Dakota Agricultural College, Fargo
Marion C. Mahoney, College of St. Catherine, St. Paul
Perl Norman, Louisiana Polytechnic Institute, Ruston
Dorothy Lou Slaba, Iowa State College, Ames
Lillian H. Tanabe, University of Hawaii, Honolulu
Helen A. Wellenstein, Briar Cliff College, Sioux City, Iowa.

Graduate exercises were held to honor the interns, at which Thomas E. Broadie, M.D., Administrator, and Winifred Howard Erickson, Director of Dietetics, presented diplomas and pins.

Sixteen girls have completed, or will soon complete their internship at the *Veterans Administration Hospital*, Bronx, New York. Graduation exercises were held July 15 for seven interns, and on September 15, nine more will be graduated. The graduates are:

July Graduates

Carolyn A. Burger, Mundelein College, Chicago
Joan D. Dawson, Immaculata College, Immaculata, Pennsylvania
Lian M. Keating, Regis College, Weston, Massachusetts
Josephine M. Spezzano, Massachusetts State Teachers College, Framingham
Margaret T. Viszneki, Rosary College, River Forest, Illinois
Corzetta Willis, Southern University, Baton Rouge, Louisiana
Isralea Zankel, Western Reserve University, Cleveland

September Graduates

Marylyn B. Anderson, University of Alabama, Tuscaloosa
Patricia A. Burke, Fontbonne College, St. Louis
Elizabeth J. Dunbar, Regis College, Weston, Massachusetts
Jean M. Gold, Seton Hill College, Greenberg, Pennsylvania
Betty Huber, University of North Dakota, Grand Forks
Marian T. Karl, College of St. Elizabeth, Convent Station, New Jersey
Marian E. McGuire, Muskingum College, New Concord, Ohio
Barbara A. Stearns, Adelphi College, Garden City, New York
Gladys M. Witt, Michigan State University, East Lansing

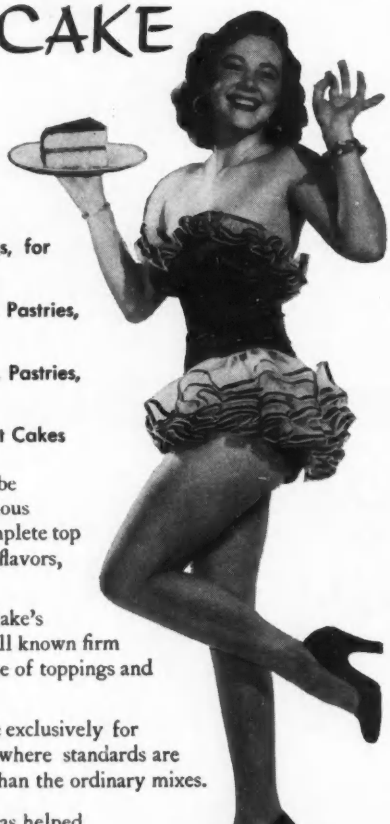
Honors for Dietitians. Effie May Winger, Past-President of both the New York State and Rochester (N. Y.) Dietetic Associations, and presently Chief Dietitian, New England Deaconess Hospital, Boston, was recently cited by the alumni of the Rochester Institute of Technology as the alumna of the year. Selection for this honor was made for outstanding accomplishments since graduation.

On July 6, the Army presented to Maj. Eleanor L. Mitchell a Certificate of Achievement for "... seemingly inexhaustible energy, skill, knowledge, and

New! Downyflake

NOW ADDS THE FINISHING TOUCH OF

GLAMOR TO CAKE



FRUIT CONCENTRATES for Cake: Orange, Strawberry, Pineapple, Wild Cherry

FRUIT FILLINGS for Pastries, and Sweet Dough

DOWNYFLUFF for Meringue Toppings, for Desserts, Pies and Cake

ICINGS Fudge and Karmel for Cakes, Pastries, Donuts and Sweet Dough

CRUNCH TOPPING for Cakes, Donuts, Pastries, Sweet Dough

MINCE PIE FILLING for Pies and Fruit Cakes

Now your complete quality cake can be "Downyflake", down to the last delicious crumb. Downyflake now offers you complete top quality ingredient set-up, mix, fillings, flavors, and toppings.

The new products come from Downyflake's recent purchase of the 78 year old well known firm of Chapman & Smith, who make a line of toppings and fillings second to none.

Because Downyflake products are made exclusively for Restaurants, Hotels and Institutions, where standards are higher, we had to make them better than the ordinary mixes.

This quality policy has helped maintain Downyflake's leadership for 36 years. The same policy now applies to the new Downyflake toppings and fillings.

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Gentlemen: ☐ I'm interested in your Downyflake Glamor Products.
☐ I would like a demonstrator to call.
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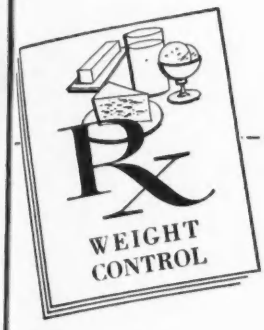
the doctor's problem...



No one envies the man who must tell a woman she is overweight . . . and that the cause is overeating!

The doctor's task is easier when he prescribes a palatable diet with foods which are typical of those the entire family needs each day. Medically supervised studies on weight reduction show women . . . and men . . . losing 1½ to 2 pounds per week on diets of everyday foods which provide approximately equal weights of protein, fat, and carbohydrate. Hunger is less of a problem with this diet . . . for a combination of protein and fat in a meal slows digestion . . . and the absorption of nutrients.

The foods included in these diets provide all essential nutrients in amounts recommended for adults. Only calories are in deficit. Dairy foods are an important feature of these meals because of their high proportion of nutrients in relation to the calories they provide. Their taste appeal and variety make the diet easy to follow until the desired weight is lost.

Doctors! Send for the convenient leaflet and diet instruction sheets containing menus for three full meals a day for an entire week. Diets at two moderately low calorie levels are included. These diet instructions will be useful even where a person may require a different calorie level for weight loss. For such individuals, the physician can suggest desired modification, retaining the basic diet plan.

These materials are yours on request —without cost or obligation. Simply fill out the coupon below and mail it today.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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Since 1915 . . .
promoting better health through nutrition research and education.

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111 N. Canal Street, Chicago 6, Illinois.

Please send me, without cost or obligation, a pad of diet instruction sheets and leaflet on weight reduction.

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resourcefulness. The high caliber of your achievements and your selfless devotion to duty will provide a lasting record of your service with us." The citation was signed by Maj. Gen. Leonard D. Heaton, Commanding General, Walter Reed Medical Center, and was presented at a surprise going-away party given by the Food Service Division in Maj. Mitchell's honor. Maj. Mitchell, until July 21, was Chief, Food Service Division, Walter Reed Army Hospital, Washington, D. C. On that date she was transferred to duty at Fitzsimons Army Hospital, Denver. Prior to her service at Walter Reed Army Hospital, she was Chief, Dietitians Section, and Assistant Chief, Women's Medical Specialist Corps, Office of the Surgeon General.

Public Health Service Training. The Health Amendments Act of 1956 passed by Congress authorizes the Public Health Service to establish a program of traineeships for graduate or specialized public health training for professional public health personnel. Congress has appropriated $1 million for this purpose for the present fiscal year.

With respect to the training of nutritionists, Jack C. Haldeman, Medical Director and Chief, Division of General Health Services, states that only graduate training in public health nutrition will be provided—not basic professional preparation in nutrition. Traineeships will include funds to cover such costs as living expenses, tuition, travel, and so on, as determined by the P.H.S. Surgeon General to be necessary to accomplish the purpose of the act.

The program is designed to supplement, not replace, training activities currently being supported by state and local health agencies. Priority will be given to individuals who are newly entering public health work or who have been employed for only a year or two. During the first year, however, it may be necessary to accept trainees who have been employed for a longer period in order to get the program under way as early as possible.

An expert advisory committee is being appointed to advise on administration of the program, including development of program standards and policies. Tentative policy and procedural materials are being developed and will be released at a later date.

National Medical Library. In the last days of the Congressional session in July, Congress passed a bill to establish a National Library of Medicine within the U. S. Public Health Service. It will replace the current Armed Forces Medical Library, probably the world's most valuable, now housed in an old building in Washington. The bill authorized appropriations to cover the cost of erecting and equipping suitable and adequate buildings and facilities for use of the new Library in or near the District of Columbia.

U. S. to Sponsor More Health Research. Another accomplishment of this last Congress was the passing of the Health Research Facilities Act of 1956, which authorizes $30 million appropriations for each of three years to help in financing construction of facilities for research in the "sciences related to health." The act defines "sciences related to health" as including: medicine, osteopathy, dentistry, and public health, and fundamental and applied sciences when related thereto. The assistance will be in the form of grants-in-aid to public and non-profit institutions on the basis of not more than 50 per cent for the federal share. The funds, which have now been appropriated, are to be used to provide additional research facilities through the construction and/or equipping of new buildings or the expansion, remodeling, alteration, and/or equipping of existing buildings.

"It's Morse code Doctor. He's asking for another cup of refreshing Continental Coffee!"

Everyone Enjoys

More Coffee Flavor

In every walk of life everyone enjoys rich, full-bodied, invigorating CONTINENTAL COFFEE. Superb blending of the world's choicest coffees and precise roasting with automatic controls assure unfailing uniformity. Write today for a FREE trial package.

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AMERICA'S LEADING COFFEE for Restaurants, Hotels and Institutions

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In the Pacific Northwest it's

ROYAL CORONA COFFEE

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Plentiful Foods MONTHLY LIST

Foods expected to be in plentiful supply during September will include:

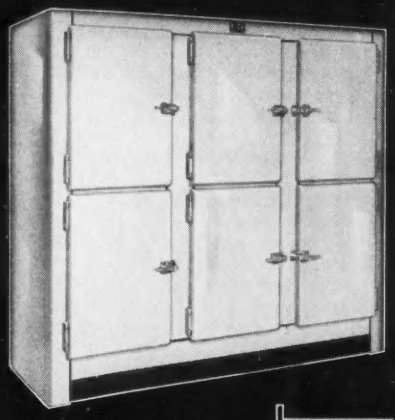
Protein foods

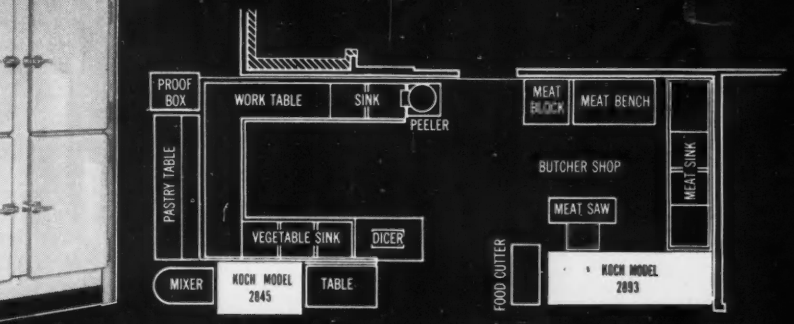
Beef
Chicken—broilers and fryers
Milk and other dairy products
Tuna, canned in oil
Turkeys

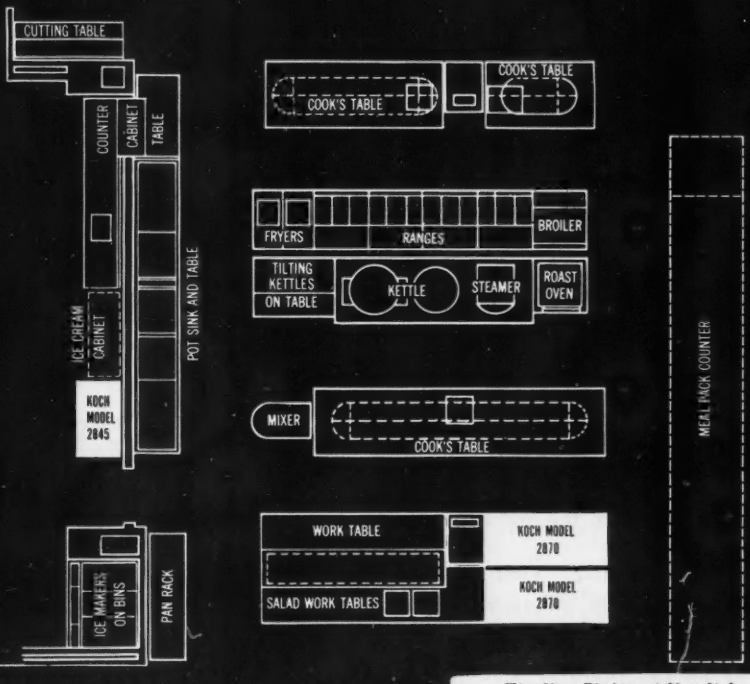
Other foods

Peanut butter
Pears, Bartlett
Rice
Summer vegetables

a good layout demands good equipment *







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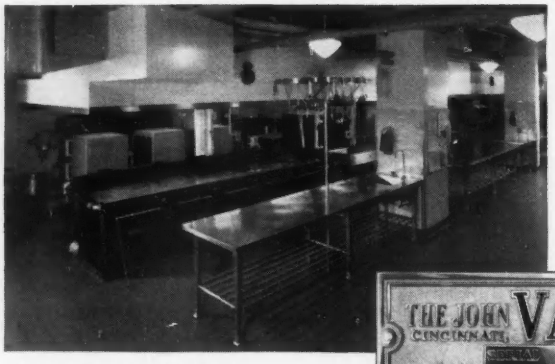
A nationwide, joint industry-government program to promote the sales of plentiful supplies of canned tuna will be climaxed during the period from September 13 to 22, when special activities will be directed toward both institutional and home consumer markets. Excellent fishing this spring and summer, normally a season of light production, has resulted in record stocks of canned tuna. As a consequence, prices are lower than for several years.

Canned tuna is available in a number of styles of pack. The solid pack consists of tuna loins packed in oil; the chunk pack, chunks in oil; the grated pack, the grated or shredded portions of the tuna loin; the flake pack, broken or mixed segments of the loin. A number of specialty packs are also on the market: the "tonno," consisting of solid-meat tuna packed in olive oil; baby food packs; and dietetic packs prepared for persons who must avoid salt in their diets. Almost all of these styles of pack are available in white or light meat.

Meeting. The American Public Health Association will meet in Atlantic City, November 12 to 16. Sessions have been planned to include discussions of the following topics: new food processing and preservation methods, including the use of antibiotics, radiation, and radioactive products; and experiences with recent outbreaks of milk-borne paratyphoid B, encephalitis, and streptoccal diseases.



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★ Besides the diet kitchens on the five patient floors of the Memorial Unit, one of which is illustrated above, Van equipped the main kitchen which provides food for the entire hospital and all cafeterias. One of the design features is the kitchen elevator . . . running up from the main kitchen . . . serving all diet kitchens . . . ideal transportation as it is exclusively for dietary use.

★ If you have food service equipment needs . . . new or modernization . . . it will pay you to use Van's *century of experience*.

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"Powdered Skim Milk" an Outdated Term. On July 2, President Eisenhower signed into law an act legally defining the term "nonfat dry milk." No longer will it be correct to say "nonfat dry milk solids" or "powdered skim milk." By definition, nonfat dry milk is "pure milk which has had the fat and water content removed and which retains the nonfat nutrients in the same relative proportions as in the fresh milk from which it is made." The word "solids" was dropped because it is generally confusing to the consumer and redundant, since "dry" is already part of the product name.

500 Types of Salmonella. At the First North American Conference of Medical Laboratory Technologists meeting in Quebec in June, Dr. Fritz Kauffmann reported that there are 500 different types of salmonella bacteria which can cause intestinal infections. Dr. Kauffmann, Director, International Salmonella Center, Copenhagen, Denmark, has set up the internationally used Kauffmann-White scheme for differentiating and labeling types of bacteria. Instead of classifying them into families and species, they are now grouped according to their reaction to chemicals and types within the groups and are distinguished by the reactions they stimulate in the blood of animals. Identification can sometimes be checked by the known reaction of the type to various sugars. This scheme has room for 3000 different types of the coli bacteria which are responsible for epidemics of diarrhea among the newborn babies in hospitals.

The most common twelve types of salmonella account for about 90 per cent of salmonella disease, but precise "fingerprinting" of the rarer ones has proved a valuable clue to epidemics. For instance, outbreaks of enteric disease in several European cities were traced to a type of salmonella prevalent in the U. S. Public health detective work established that the epidemic was due to powdered eggs shipped from America. Another example concerned the identification of a rare salmonella in the stools of a Copenhagen victim of stomach upset. Her infection was traced to bananas imported from the Belgian Congo where the type had previously been reported.

This report was made at a session devoted to detection of enteric disease in cold climates sponsored by Lederle Laboratories Division, American Cyanamid Company, and North American Cyanamid Ltd. Panel participants included Dr. Harold J. Fournelle, U. S. Public Health Service in Alaska, who has discovered much enteric disease among Eskimos; Dr. William R. Bailey, Canadian Public Health Service; and Dr. P. R. Edwards, U. S. Public Health Service bacteriologist in charge of salmonella typing.

Use of Fruit in Preserves. "Survey of Fruit Use by Preserve Manufacturers" has been released as Marketing Research Report No. 123, U. S. Department of Agriculture. This report notes that in 1953, the preserve industry used about

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New—from Diversey
a revolutionary liquid cleaner
that's gentle to hands,
safe on equipment

Red, raw hands are no joke to the people who do your hand washing jobs. You can bet they'll be grateful when you switch to TIG, Diversey's revolutionary new *liquid* cleaner. TIG's extraordinary cleaning power does *not* depend on any of the harsh, skin-punishing ingredients commonly used in other compounds. TIG is neutral . . . harmless as plain water, not only to hands but to your costly equipment. TIG's fast, powerful action makes short work of the toughest jobs . . . penetrates hard-caked grease, crusted bake-ons, stubborn stains . . . floats all the soil away. TIG saves money, too. One compact 10 gallon drum of liquid TIG out-lasts and out-performs a bulky 325 lb. barrel of granular compound. Ask your Diversey D-Man for a demonstration. Or for more facts, write The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.

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CELLU® *flavorful* DIET FOODS

Delicious, choice, sun-ripened fruits packed in water without added sugar or artificial sweetening. About ⅓ lower in carbohydrate than fresh fruits. Particularly tempting for reducing diets. Following fruits available: Apricots, Blackberries, Blueberries, Boysenberries, Cherries, Figs, Fruit, Cocktail, Grapes, Peaches, Pears, Pineapple, Prune Plums, Raspberries, Rhubarb and Strawberries.

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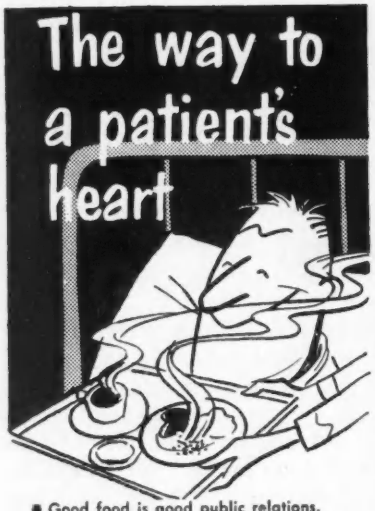

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are ideal for institutional use, providing consistent year-round top quality real fruit flavor—at half the price.

★ *Easy to use and store — no spoilage — no squeezing*
★ *Economical — you always have just the right amount on hand*

CRAMORES CRYSTALS
made from a base of pure, dehydrated citrus fruit juices with fruit components added to enhance flavor and body—are available in lemon-lime and orange.

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300 million lb. fruit and berries (fresh weight equivalent) in the manufacture of jams, jellies, and preserves. This figure includes limited quantities used in making pie fillings and related products. About 46 per cent of this amount was received in frozen form—41 per cent as frozen fruits and berries and 5 per cent as frozen juice. Non-frozen juices represented the second largest source of fruits, accounting for 29 per cent of the total. This was followed by 15 per cent fresh, 9 per cent canned, and 1 per cent dried fruits and berries.

During 1953, the preserve industry used almost 36 per cent of all frozen fruits and berries packed in containers holding over 10 lb.—the equivalent of 23.3 per cent of the total 1953 commerical frozen fruit and berry pack. Preservers were a major outlet for all frozen fruits and berries except: apples, cherries, and blueberries.

Between 1948 and 1953, commercial jam, preserve, and jelly production rose from about 2.98 lb. per person to almost 3.66 lb. in 1953, a 23 per cent per capita rise in production. This increase appeared to be closely related to increases in personal disposable income; when average spendable income increased 1.1 per cent, a 1 per cent increase in preserve production accompanied it. When income dropped in 1949, jam production also fell. Consumption may be expected to increase to around 4 lb. per capita by 1975, which means a rise from 825 to 915 million lb., or about 40 to 55 per cent greater than 1953 production. This would require from 410 to 460 million lb. fruit (fresh weight equivalent). In terms of frozen fruit, the need would be between 190 and 210 million lb., an increase equivalent to between 9 and 13 per cent of the total 1953 frozen fruit pack, excluding frozen citrus juice concentrates.

School Lunch Ten Years Old. On June 4, a birthday party in which school children throughout the country took part was celebrated as the tenth anniversary of the National School Lunch Program. Honor guest of the occasion was President Eisenhower, who accepted a special birthday cake at the White House from a boy and girl representing the school children of America. In Milwaukee, Secretary of Agriculture Ezra Taft Benson joined students at the 55th Street School in eating a typical school lunch and also received a Tenth Anniversary Birthday Cake. Similar observances were conducted in schools throughout the country.

In the ten years since the establishment of the National School Lunch Program, it has grown to become an important factor in safeguarding the health and well-being of the nation's children. The program is now in operation in all of the forty-eight states, the District of Columbia, Alaska, Hawaii, Puerto Rico, and the Virgin Islands. A total of 56,000 schools participated in the program last year. In those schools, a total of 11 million children took part in the program, eating more than 1½ billion complete meals.

At the same time, the program has grown to major importance in encourag-

What chef would believe...

SO RICH-TASTING A WHIPPED SALAD COULD BE MADE WITH MILK?

THE SECRET IS CARNATION–THE MILK THAT WHIPS –NO OTHER FORM OF MILK WILL DO.

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What's more, Carnation whipped salads taste even better than those made with cream. Unlike heavy cream, Carnation doesn't "cover up" true fruit flavors. They're so much smoother, too, because not even cream has Carnation's extra special blending qualities.

These special blending and whipping qualities make Carnation the ideal milk for *all* cooking and baking. Why not introduce your chef to Carnation today? Suggest he try this delicious whipped salad as a starter.

WHIPPED FRUIT SALAD

(Makes about 6 servings)

- 1 3-ounce package lemon gelatin
- ¾ cup hot water
- ¼ cup lemon juice
- ½ cup undiluted CARNATION EVAPORATED MILK
- 1 cup diced oranges
- 1 cup diced apples
- 1 tablespoon grated orange rind

Dissolve gelatin in hot water; add 3 *tablespoons* lemon juice. Chill until thickened and syrupy. Chill Carnation in refrigerator tray until soft crystals form around edges of tray (10-15 minutes). Whip until stiff (about 1 minute). Add 1 tablespoon lemon juice and whip *very* stiff (about 2 minutes longer). Fold whipped Carnation, oranges, apples and orange rind into chilled gelatin. Spoon into 1 large or 6 individual molds. Chill until firm (1-2 hours). Serve on salad greens.

"from Contented Cows"

P.S. **FOR MARY BLAKE'S** free set of 20 Carnation quantity recipe cards, write to Mary Blake, Carnation Company, Dept. C-96, Los Angeles 19, California.

ing the domestic consumption of agricultural commodities. School lunches served over 2½ billion lb. food last year, most of which was purchased locally by participating schools which spent more than $350 million with local merchants. The U.S.D.A. also contributed about $100 million in commodities to the schools under its direct distribution program from stocks acquired under price-support and bought under surplus-removal operations. In addition, $50 million was made available for local purchasing of milk under the Special School Milk Program.

Beef Consumption. A new record for beef eating in the U.S. is expected to be set in 1956—the fourth new high in succession. An average per capita consumption of 83 lb. (a little more than half the total of all meat eaten per person) is expected. This is 2 lb. more than last year.

U.S.D.A. statisticians are noting a changing dietary pattern, in that there appears to be a long-term trend toward more beef, and consequently more red meat. In 1955, we ate 81 lb. beef per person compared with 66 lb. pork. In the last eight years (excluding 1956), consumers have spent more total dollars for beef than pork, although they bought more pounds of pork in five of those years. Nearly 3 per cent of U. S. consumer income went for beef in each of those years, while expenditures for pork declined from 3 per cent of income in 1947 to less than 2 per cent in 1955.

Some surveys indicate that homemakers are buying leaner (lower grade beef). A recent California survey of 1125 shoppers in fifteen stores in a university town showed that the leaner cuts of beef were preferred. However, cooking of leaner cuts requires care. The Georgia Experiment Station recommends that it be cooked by moist heat, such as braising, stewing, or pot-roasting. The problem seems to be in heating it fast enough to have it juicy when cooked. Round steaks cut 3 in. thick were rated by Georgia scientists as significantly higher in tenderness than thin cuts, but the thin cuts proved best for braising.

Food Habits on the Farm. Home-produced food still represents an important income-saver to the farmer. According to a U.S.D.A. survey of 528 farm households in twelve North Central states, nearly half of farm families' yearly food supply, figured at retail value, is farm-produced. Meat and milk, which are likely to be purchased less when family incomes are low, made up much of the home-produced food in this survey.

Farm homemakers canned or froze an average of 761 lb. food in 1951, practically all of them doing some canning and three-fourths some freezing. Frozen meat, poultry, and fish made up almost half (341 lb. per household) of the total food which was canned or frozen. Most of this was farm-produced, although many families bought beef or pork for freezing. Most families preserved vegetables and fruits by canning and made them into jellies, jams, or pickles. Little was frozen.

College-trained homemakers were more apt to freeze food than those with less education, and women between the ages of thirty and forty-nine did more freezing as well as canning than those older and younger, probably because in this age bracket there are larger families living at home. High-income families more often had freezers or lockers and therefore froze more food. The average was 548 lb. for a family with an income of $4000 and over and 254 lb. for those with incomes under $2000.

Dietary Habits in Iowa. Women thirty years of age or older and school children have been the subjects of studies of eating patterns by researchers at the Iowa Agricultural Experiment Station.

Among the women, they found that about two-thirds were not getting enough calcium. To meet recommendations, they would need to drink 1 to 2 cups extra milk daily. In the aggregate, this would mean an increased consumption of 40,000 gal. daily in Iowa, or more than 14½ million gal. a year. On the other hand, the Iowa women on the average ate well of protein-rich foods. However, if those who had a protein deficit ate more of all the foods that supplied most of the proteins in their diets, the investigators estimated that in one year they would use 6,800,000 lb. more of meats, poultry, and fish, plus 1,100,000 doz. eggs, 400,000 lb. cheese, 3,300,000 qt. milk, and 5,500,-

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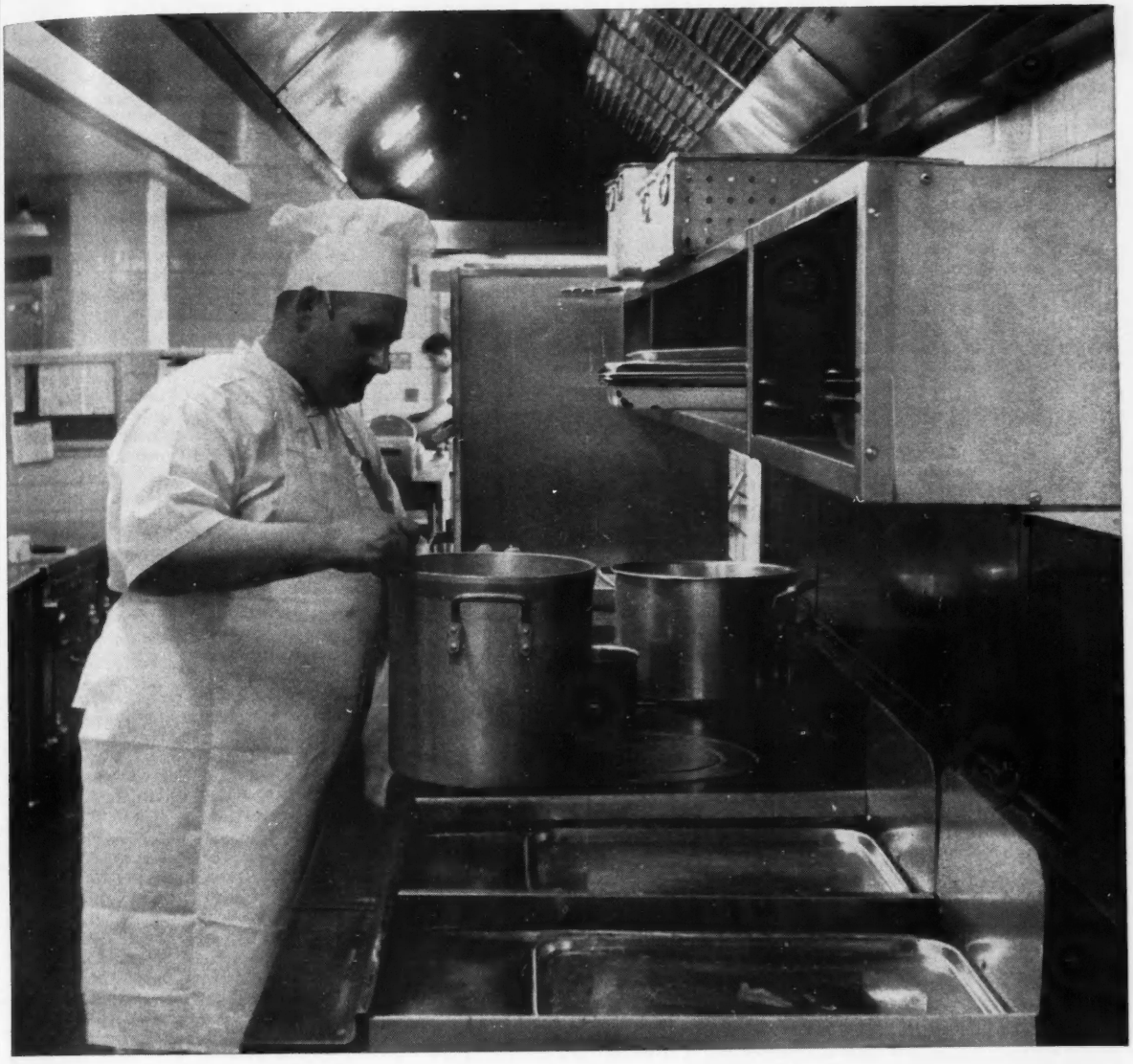

"We like the way GAS meets fluctuating demands"

— *Boston's Carney Hospital*

Hospital supervisors, and Michael Kenney, chef, at Boston's Carney Hospital, are more than satisfied with their new Gas equipment.

"Gas provides the speed we need for our type operation. The heat is easily controlled, and the overall economy of operation and the low maintenance cost have more than justified our choice of Gas equipment. The ability to meet rapidly fluctuating demands together with the complete dependability of Gas has also contributed to our satisfaction with our present equipment."

The Gas equipment at Carney includes 2 fryers, 3 ranges, a broiler and a double section roast oven . . . all Vulcan. The kitchen is planned to feed 1000 patients and hospital personnel when operating at full capacity.

Carney Hospital has found Gas equipment efficient and dependable. In hospital after hospital from coast to coast, you'll find Gas providing similar results. If you're planning a new kitchen or remodeling or expanding your present one, call your Gas Company Commercial Specialist and discuss the economies and results modern Gas equipment provides. *American Gas Association.*

000 loaves of bread. About three-fourths of the protein in the Iowa women's diets came from these products. Records show that many of the women who needed more protein also needed more calories.

Of the school children studied, boys six to nineteen years old came closer to meeting the recommended daily allowance for calcium than did girls in the same age group. However, if *all* the boys drank as much milk as recommended for calcium intake, an additional 21,000 gal. daily would be used in the state. If the girls increased milk consumption to recommended levels, they would use 25,000 gal. more daily, or more than 13,500,000 gal. a year. Other research findings indicated that the diets of the school children could also be improved by more generous use of meat, eggs, fruits, and vegetables.

Bartlett Pears. This is the season for pears—the Bartlett being the most popular for dessert eating. A near-record California crop has put the Bartlett pear on the "plentiful foods" list for the last two months. When ripe for eating, Bartletts are pale yellow with a tinge of pink, large, juicy, fine-grained, and mellow but not over-soft when pressed gently with finger tips. Unlike other pears, they seldom go into storage before shipping to market. Generally, refrigerated cars to keep temperatures below 40°F. (low enough to prevent ripening) are used for getting the Bartletts to eastern markets. After reaching their destination, six to nine days may be required for ripening in a temperature-controlled room. Bartletts have the best quality when ripened at 66° to 68°F., and have poor quality if ripened above 80°F. (usual summer temperatures).

This year some pears are being shipped with modified icing to allow partial ripening en route to market to save ripening time and expense and to have pears ready for sale sooner.

Uncooked Jam. Strawberries, raspberries, blackberries, blueberries, and peaches can be used successfully in making uncooked jam with fruit pectin, according to tests by U.S.D.A. home economists. This type of jam, they report, is easy to make. A pectin solution is stirred into sweetened crushed fruit and the mixture is ladled into jelly glasses to stand until "set" before sealing and storing in the refrigerator or freezer. The jam has the flavor and color of fresh fruit plus an attractive jellied texture that makes it spread well. It will keep in the refrigerator for a few months and in the freezer for a year, but should not be stored on the kitchen shelf.

Amino Acid Requirements of Young Women. Work to determine young women's requirements for the essential amino acids threonine, valine, tryptophan, phenylalanine, leucine, isoleucine and cystine–methionine (the sulphur-containing amino acids) has been carried out at the University of Nebraska and the University of California at Los Angeles under contract with the U.S.D.A.

At the University of Nebraska, Dr. Ruth Leverton fed girls synthetic diets containing all the nutrients known to be needed for good nutrition and varied the amount of the particular amino acid under study. The synthetic diets consisted of cornstarch, sugar, fat, vitamins, and minerals. Added to this ration were the amino acids in pure form dissolved in distilled water. For six to eight weeks, the girls lived on this chemical diet plus small amounts of fruits or vegetables to make the meals palatable. Nitrogen balance studies were done to determine nitrogen equilibrium.

From results of these tests, Dr. Leverton has suggested the following minimum requirements for young women: valine, 650 mg.; tryptophan, 160 mg.; leucine, 620 mg.; and phenylalanine, 220 mg. when the diet supplies 900 mg. tyrosine.

At the University of California at Los Angeles, Marian E. Swenseid and associates used the same plan of experiment to study isoleucine and cystine-methionine requirements. Their findings indicate a requirement of 250 to 450 mg. isoleucine daily, and 350 to 550 mg. cystine-methionine daily. These requirements are lower than those for young men suggested by other researchers.

News of State Associations

California Dietetic Association. In the largest vote in the history of the California Dietetic Association, the fol-

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. . . save horizontal space for paying customers!
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Every foot that your kitchen spreads *sideways* means less dining area . . . costs you both rent and revenue. But spread *up*, and you get extra kitchen space for no extra cost! Blodgett Vertical Ovens not only save you floor space, but also make your cooks work better . . . with fewer steps, less stooping, cooler kitchens. These ovens roast, bake and cook simultaneously, too. There are 24 models to fit every need . . . call your Kitchen Equipment Dealer now for full facts!
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ONLY BLODGETT OVENS HAVE:
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"*My* child gained faster at that stage..."

The physician's function is complicated by the belief of many mothers that "heaviness" is the all-important indicator of physical progress. Obviously, it "cannot be taken as the *only* criterion of health and may be misleading at times. . . ."[1] More important than weight gain, per se, is *physiologic* weight gain.

This was demonstrated in a recent study of the effects of feeding breast milk and various formulas to premature infants, where high ash levels associated with high protein formulas were believed to cause ash retention, with resultant obligate water retention. Kagan and his associates[2] considered that there was a difference in the character of the increased weight gain due to high ash levels. ". . . the authors concluded that weight gain in itself is not a good index of progress."[3]

Assure physiologic weight gain with regular SIMILAC® feedings

When breast feeding isn't feasible, Similac assures physiologic nutrition by providing more calories per unit of ash. Because it closely resembles mother's milk in composition, nutritional balance and digestibility, Similac helps to reduce complications in the first year of life.

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There is no closer equivalent to the milk of healthy, well-nourished mothers

REFERENCES:

1. Holt, L. E., Jr., and McIntosh, R.: Pediatrics, ed. 12, New York, Appleton-Century-Crofts, Inc., 1953, p. 12.
2. Kagan, B. M.; Hess, J. H.; Lundeen, E.; Shafer, K.; Parker, J. B., and Stigall, C.: Pediatrics *15*:373 (April) 1955.
3. Editorial: J.A.M.A. *159*:116 (Sept. 10) 1955.

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lowing were elected to serve in the coming year: President-Elect, Sylvia Mitchell, Herrick Memorial Hospital, Berkeley; and Secretary, Phyllis Ullman, Menlo Park.

The *Sacramento Region* at its May meeting heard Violet Brughelli, Supervising Nutritionist, California Department of Education, discuss "School Lunch Programs in California." . . . Mary Peterson, Nutritionist, Sacramento Health Department, recently met with the Sacramento Association of Boarding Nursing Home Operators to tell them about the consulting services available from the regional dietetic association and to seek their co-sponsorship of projects undertaken by the region's Nutrition Committee on Small Institutions.

Officers for the *Santa Barbara Region* for 1956–57 will be: Chairman, Helen Hugo; Vice-Chairman, Helen Moss; and Secretary-Treasurer, Ella Hendrick.

Colorado Dietetic Association. Announcement has been made of the election of the following officers for the coming year for the Colorado Dietetic Association: President, Dorothy Scott, Children's Hospital, Denver; President-Elect, Rosamond Acker, Denver; Secretary, Kathleen Newell, University of Colorado Medical Center, Denver; and Treasurer, Betsey Provines, Colorado Springs.

Iowa Dietetic Association. Officers who will serve the Iowa Dietetic Association in 1956–57 will be: President, Margaret Osborn, State University of Iowa, Iowa City; President-Elect, Dorris Hittle, Ames; and Secretary, Betty Johnson, Ottumwa Hospital, Ottumwa.

Kansas Dietetic Association. Elected officers of the Kansas Dietetic Association for next year will be: President, Arlene Payne, University of Kansas Medical Center, Kansas City; President-Elect, Grace Shugart, Kansas State College, Manhattan; Secretary, Kathleen Shea, Wichita, and Treasurer, Velna Werth, VA Hospital, Topeka.

Minnesota Dietetic Association. The following members of the Minnesota Dietetic Association have been elected to serve as officers for 1956–57: President, Sister M. Bernadette, College of St. Teresa, Winona; President-Elect, Catherine Reinheimer, Midway Hospital, St. Paul; and Treasurer, Juliette Vernet, St. Barnabas Hospital, Minneapolis.

Nebraska Dietetic Association. With the aid of the Nebraska Hospital Association, the Nebraska Dietetic Association is publishing a quarterly bulletin for hospital cooks in an effort to aid the small hospital without the service of a qualified dietitian. The bulletin will contain helpful hints on food purchasing, modified diets, short-cuts in dietary duties, recipes, and suggested menus.

New Mexico Dietetic Association. New officers for 1956–57 for the New Mexico Dietetic Association will be: President, Sister Mary Bertha, St. Joseph's Hospital, Albuquerque; President-Elect, Ruth Titus, Bataan Memorial Methodist Hospital, Albuquerque; and Secretary-Treasurer, Phyliss McRae, Atchison, Topeka & Santa Fe Hospital, Albuquerque.

North Dakota Dietetic Association. The following have been elected officers of the North Dakota Dietetic Association for 1956–57: President, Ethel Dietz, VA Hospital, Fargo; President-Elect, Dorothy Revell, Fargo; and Secretary, Mildred Riedesel, University of North Dakota, Grand Forks.

Ohio Dietetic Association. In 1956–57, officers of the Ohio Dietetic Association will be: President, Virginia Draim, Columbus; President-Elect, Janet Bryan, Cincinnati; Secretary, Margaret Hinkle, Ohio State University Hospital, Columbus; and Treasurer, Ethel Downey, Miami Valley Hospital, Dayton.

Pennsylvania Dietetic Association. This year, the Frances L. Swenson Scholarship Award of the Pennsylvania Dietetic Association was increased from one scholarship of $100 to five. Four of this year's recipients are graduates from The Pennsylvania State University and one comes from the Carnegie Institute of Technology. From Pennsylvania State, the recipients are: Ruth E. Eshelman, intern at the Frances Stern Food Clinic, Boston Dispensary, Boston; Florence L. Gemmill, intern at Massachusetts Gen-

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And many doctors recommend Cream of Rice in modified diets for food allergies, ulcers, high blood pressure, intestinal distress and old-age food difficulties.

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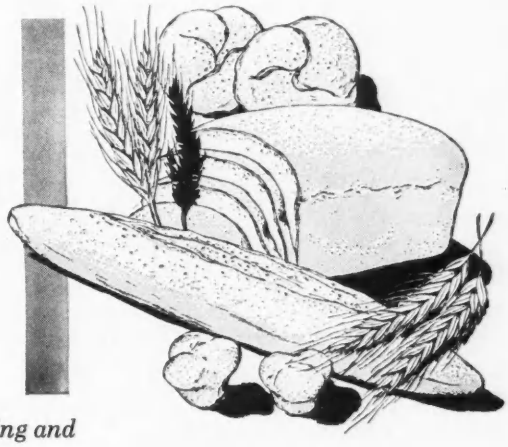


A Brief History of Milling and Baking by SCIENCE WRITER

CHAPTER XI. *Milling Begins Moving Westward*

FROM FOREST TO FARM

The land was there to the west, waiting to be used. Thousands of square miles beyond the Alleghenies were forest covered. As the population pushed westward in the early 1800s, along forest trails and corduroy roads, settlements came into being chiefly beside waterpower sites.

Small grist mills came into operation at these small centres near the streams and falls to serve the settlers who cleared the land and then farmed it.

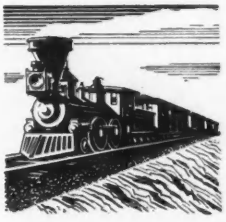
As the rich land increased its bounty, settlements soon grew in size, and so did the mills. Not only grist but saw and woolen mills were constructed to serve the areas.

These self-sufficient small settlements were practically isolated until better roads reached them. There is an instance in Indiana of a thriving small center which was so remote that almost half of the Nineteenth Century had passed before it had more than a semi-annual contact by wagon train with the nearest major trading center, Cincinnati.

CANALS, RAILROADS, TURNPIKES

The pioneering farmers began to use the immense fertility of the Mid West. The need for grain to feed the crowded eastern U. S. and for export existed. But better ways to get the grain to market were needed.

Water transport was the first answer. By canal, river and lake the grain traveled east to the seaboard. Not long after the canals were well established, the railroads were built into a great network which reached the Pacific. Better roads and turnpikes, too, were made. The great, rich plains of the states in the western part of the Mississippi's basin added their prodigious output of grain to the supply.



A FLOOD OF GRAIN

As the land filled with settlers a flood of products poured to the Atlantic: the grains, wheat and corn; cattle; coal and ores. The earlier isolated communities tended to disappear. Rural areas were more closely linked with urban centers. New patterns of living emerged and new methods of large scale production were created to meet the new conditions. We shall tell about this development as it affects milling in our next chapter.

BETTER WHITE FLOUR AND BREAD FOR BETTER HEALTH

This is a fact: Americans want fine, *white* flour and bread. To get it millers have to mill out portions of the grain carrying valuable vitamins. But then they restore the most important of these, without sacrificing whiteness, by "enriching" with pure vitamins B_1, B_2, niacin and iron. Result: white flour of highest nutritional value, better health for millions of people.

This is one of a series of articles which is being published in professional nutrition and dietetic journals, and which will be widely distributed for educational purposes. Reprints of this and all previous chapters are available without charge. Write to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

*This is the title of a definitive history of milling by John Storck and Walter Dorwin Teague, published by the University of Minnesota Press at Minneapolis and copyrighted by the University of Minnesota. It is used with permission as a source of material for this series of advertisements.

Enriched with vitamins and iron for better nutrition

eral Hospital, Boston; Barbara Larpenteur, intern at the University of Wisconsin Hospital, Madison; and Patricia L. Iobst, intern at the University of Washington, Seattle. Elizabeth L. Heltsley, a graduate of Carnegie Institute of Technology, is interning at Massachusetts General Hospital, Boston.

Officers elected to serve the *Philadelphia Dietetic Association* in 1956–57 are: President, Miriam Gaige, Roosevelt Junior High School; Vice-President, Marion Moorehead, Northern Division, Philadelphia General Hospital; and Secretary, Jean Joslin, St. Christopher's Hospital for Children.

Washington State Dietetic Association. The Public Relations Committee of the Washington Association has completed arrangements for a speakers' bureau to function in Seattle this year. Eighteen dietitians in the area have volunteered to speak to organizations which may request talks. The bureau will be listed, along with fifty other organizations, in a program planning bulletin put out by the Seattle Public Library, which goes to more than three hundred program chairmen.

In 1956–57, the Washington State Dietetic Association will have as its officers: President, June Stein, Seattle; President-Elect, Patricia Brockbank, Seattle; and Treasurer, Monica Roller, State School for the Deaf, Vancouver.

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News of Products and Services

A new, heavy-duty, electric fry kettle called the "Super G" is announced by *Griswold Manufacturing Company*. Stainless steel tubular heating units cover the entire bottom and two sides of the fat well. Fat is completely preheated in 4½ min. with neither cold zones nor burning. The "Super G" uses 25 lb. fat and requires 695 watts to maintain 350°F. Capacity is 6½ lb. French fries, raw weight, per hour. A new feature called the "Electro-Safety-Brain" prevents over-heating of fat. The fry kettle has a one-piece, stainless steel top, a swing-back heating unit for easy removal and easy cleaning of the fat container, and is built on 6-in. adjustable legs. Fat is siphoned and strained with a plunger which is stored in a rack over the second fat receptacle. It is not necessary to prime this straining operation with hot fat, which eliminates the danger of burn.

"Erecta Shelf," product of *Metropolitan Wire Goods Corporation*, is a steel rod shelving particularly suited for use where air circulation is desirable, as in moist or refrigerated areas, or where objects must drain. The shelves are assembled without nuts, bolts, or screws; the heavy-weight, reinforced steel rod is notched so that shelves and uprights are locked into place. There is a leveling device on the foot of each upright to compensate for pitched or uneven floors. The shelves may be placed at 5-in. intervals. They are available in 12- and 18-in. widths, 24, 36, or 48 in. in length. Shorter uprights are obtained by cutting down the longer lengths; width of shelves may be increased by joining the units with brackets. "Erecta Shelves" can be mismantled and run through a dish-washing machine or hosed down.

The Food Machinery and Chemical Corporation is promoting its new FMC TeaMaker, displayed for the first time at the recent National Restaurant Association show. It was developed by a joint committee of the Tea Council of the U.S.A., Inc. and the National Restaurant Association to provide a better method of dispensing hot or iced tea. A supply of hot water is maintained in the FMC TeaMaker for preparing a tea concentrate, which is later mixed with water by pushing a button allowing just the right quantity of hot water for a delicious cup of tea, or cold water for iced tea. Preparing the concentrate requires only a few minutes. After that, individual cups or glasses of tea can be served in a matter of seconds.

Standard Brands Incorporated is distributing "Tips on Tips"—a courtesy training tool for service employees. The device is based on pictures of eighteen babies by photographer Constance Bannister, whose faces express many of the basic human emotions likely to arise in the day-to-day relationship between service employees and their customers. The photos are featured on eighteen attractive posters for posting on employee bulletin boards. Each heading

EASY NEW WAY TO

give good red meat a gravy it deserves!

Diners prefer gravies made rich and full of flavor with

Your gravy will have rich meaty flavor, as tasty as the good red meat itself, when you add Maggi® Granulated Beef Bouillon cubes to the gravy as it cooks. The flavor's enriched . . . natural . . . inviting!

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presents a well-known problem in customer relations; a practical, down-to-earth answer to that problem appears in the printed caption below the photo. A film strip with the eighteen baby photos is also available. The same headings as those on the posters are used but the printed "Tips" are included in a script which is read as the film strip is shown. *Standard Brands* has developed three different scripts to accompany the film; one for the use of restaurant operators at association meetings; one for groups of service employees; and one for service employees in non-tipping restaurants. Distribution of both the posters and film strip will be handled by the company's field representatives.

A new product designed to prevent food from sticking to cooking utensils has been introduced by *L. L. Antle & Co., Inc.* Called "Anco Stop-Stick," the liquid is both odorless and tasteless and prevents food from sticking to waffle irons, frying pans, grills and baking sheets.

General Foods is now offering Jell-O's three newest flavors—black raspberry, black cherry, and grape—to the institutional trade. This brings to ten the number of Jell-O flavors distributed by *General Foods' Institutional Products Division.* The new flavors are packaged in both 24-oz. and 4½-lb. boxes, 12 and 6 to the case, respectively.

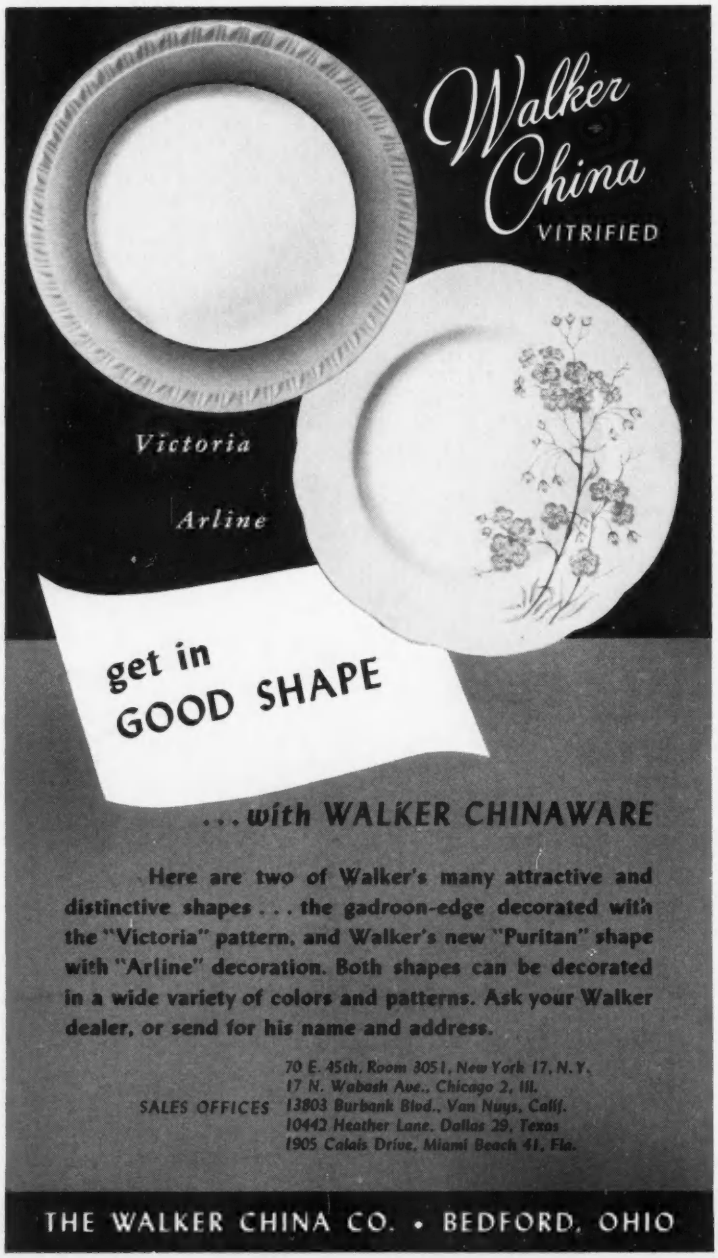
Lawry's Products, Inc. is now marketing a "seasoned" salt substitute for low-sodium diets. Spices and herbs, combined with potassium chloride, monopotassium chloride, monosodium glutamate, and tri-calcium phosphate provide a pleasing flavor adjunct for meats, cottage cheese, eggs, vegetables, salads, fish gravies, soups, poultry, and other dishes. A special introductory packaging arrangement provides both a 2-oz. bottle of the seasoned salt substitute as well as a free, plastic pocket shaker for the diner to carry in his pocket or her purse.

"Junket" Brand Foods is distributing a folder on "Low Calorie Desserts." A variety of suggestions are offered for rennet-custards, sherbets, and frozen desserts made with "Junket" Rennet Powder and Tablets, "Junket" Sherbet Mix, and "Junket" Freezing Mix. Along with directions, the caloric value of the desserts is also given. Suggestions for flavor variations (almond, lemon, orange, and peppermint) and colorful garnishes are included.

Economics Laboratory, Inc. has introduced "Acclaim," a foil-wrapped, chlorinated, mechanical dishwashing compound for both melamine and china dinnerware. The new product is packaged in 2-lb. containers.

Complete information on *Crimsco's* "Meals-On-Wheels System," its use in hospital food service, and its advantages, is given in a new two-color, illustrated, six-page brochure. Directed to the administrator, dietitian, architect, and consultant, this brochure shows and describes the new self-contained refrigeration and built-in beverage service available with a choice of several models.

"The Rueben," a man-sized sandwich of corned beef, sauerkraut, and Swiss cheese on Russian rye bread, submitted by Fern Snider, Chef at the Rose Bowl Restaurant, Omaha, Nebraska, was selected as the best sandwich from among six hundred entries in the *National Restaurant Association's* sandwich idea contest to determine the most unusual restaurant sandwich. Second award went to the "Delmonico Steak Sandwich" submitted by Edward J. Skarra, Executive Chef of the Chez Paree, Chicago. Third place winner was a "Curried Cheese and Olive Broiler Sandwich" by Bernice I. Goodrich, Totem Pole Restaurant, Vancouver, Washington. "The Rueben" is a three-decker sandwich—three slices of Russian rye are spread with Thousand Island dressing and filled with slices of Swiss cheese and corned beef, interlaced with sauerkraut. The sandwich is then grilled until the cheese melts. The second and third place sandwiches are also served hot. The "Delmonico Steak Sandwich" combines steak and grilled tomato and green pepper slices in an open-face sandwich served with a Bordelaise sauce. Third place winner is a curried cheese, ripe olive, and green onion combination served on toasted, split English muffins. As originator of the top sandwich, Mrs. Snider received a European "tour for two" plus $1,000 in cash. Second and third prize winners received $1,000 and $500 respectively. Winners were selected and announced at a luncheon given by *Standard Brands Incorporated.* Included on the panel of five judg sewas A.D.A. member, Edith Barber, Food Editor, General Features Syndicate.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